                              SEQUENCE LISTING
    <110> The University of North Carolina
           Threadgill, David W
           Lee, Daekee

    <120> MODULATION OF EPIDERMAL GROWTH FACTOR HETERODIMER ACTIVITY

    <130> 421/99 PCT

    <150> US 60/545,185
    <151> 2004-02-17

    <160> 21

    <170> PatentIn version 3.3

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    Cys Gln Gly Thr Ser Asn Lys Leu Thr Gln Leu Gly Thr Phe Glu Asp
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    His Phe Leu Ser Leu Gln Arg Met Phe Asn Asn Cys Glu Val Val Leu
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Ile Leu His Gly Ala Val Arg Phe Ser Asn Asn Pro Ala Leu Cys Asn
            145                 150                 155

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Val Glu Ser Ile Gln Trp Arg Asp Ile Val Ser Ser Asp Phe Leu Ser
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aac atg tcg atg gac ttc cag aac cac ctg ggc agc tgc caa aag tgt        816
Asn Met Ser Met Asp Phe Gln Asn His Leu Gly Ser Cys Gln Lys Cys
175                 180                 185                 190

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cga gac gaa gcc acg tgc aag gac acc tgc ccc cca ctc atg ctc tac       1056
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gag gaa gac ggc gtc cgc aag tgt aag aag tgc gaa ggg cct tgc cgc       1248
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His Thr Pro Pro Leu Asp Pro Gln Glu Leu Asp Ile Leu Lys Thr Val
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Thr Asp Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr
415             420                 425                 430

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tcc ttg gga tta cgc tcc ctc aag gag ata agt gat gga gat gtg ata      1632
Ser Leu Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile
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Arg Asn Val Ser Arg Gly Arg Glu Cys Val Asp Lys Cys Asn Leu Leu
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His Pro Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg
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gga cca gac aac tgt atc cag tgt gcc cac tac att gac ggc ccc cac      2016
Gly Pro Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His
575                 580                 585                 590

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Glu Leu Val Glu Pro Leu Thr Pro Ser Gly Glu Ala Pro Asn Gln Ala
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ctc ttg agg atc ttg aag gaa act gaa ttc aaa aag atc aaa gtg ctg      2400
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Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys Gly Leu Trp Ile Pro Glu
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gcc agc gtg gac aac ccc cac gtg tgc cgc ctg ctg ggc atc tgc ctc      2592
Ala Ser Val Asp Asn Pro His Val Cys Arg Leu Leu Gly Ile Cys Leu
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acc tcc acc gtg cag ctc atc acg cag ctc atg ccc ttc ggc tgc ctc      2640
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ctc aac tgg tgt gtg cag atc gca aag ggc atg aac tac ttg gag gac      2736
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Arg Arg Leu Val His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys
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aca ccg cag cat gtc aag atc aca gat ttt ggg ctg gcc aaa ctg ctg      2832
Thr Pro Gln His Val Lys Ile Thr Asp Phe Gly Leu Ala Lys Leu Leu
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ggt gcg gaa gag aaa gaa tac cat gca gaa gga ggc aaa gtg cct atc      2880
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aag tgg atg gca ttg gaa tca att tta cac aga atc tat acc cac cag      2928
Lys Trp Met Ala Leu Glu Ser Ile Leu His Arg Ile Tyr Thr His Gln
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Pro Lys Phe Arg Glu Leu Ile Ile Glu Phe Ser Lys Met Ala Arg Asp
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ccc cag cgc tac ctt gtc att cag ggg gat gaa aga atg cat ttg cca      3216
Pro Gln Arg Tyr Leu Val Ile Gln Gly Asp Glu Arg Met His Leu Pro
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gtt ccc aaa agg  ccc gct ggc tct gtg  cag aat cct gtc tat   cac      3579
Val Pro Lys Arg  Pro Ala Gly Ser Val  Gln Asn Pro Val Tyr   His
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aat cag cct ctg  aac ccc gcg ccc agc  aga gac cca cac tac   cag      3624
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Asp Pro His Ser  Thr Ala Val Gly Asn  Pro Glu Tyr Leu Asn   Thr
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gtc cag ccc acc  tgt gtc aac agc aca  ttc gac agc cct gcc   cac      3714
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tgg gcc cag aaa  ggc agc cac caa att  agc ctg gac aac cct   gac      3759
Trp Ala Gln Lys  Gly Ser His Gln Ile  Ser Leu Asp Asn Pro   Asp
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Ser Ile Gln Trp Arg Asp Ile Val Ser Ser Asp Phe Leu Ser Asn Met
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Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His
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Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Ser Leu Ser Ile Asn
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Ala Thr Asn Ile Lys His Phe Lys Asn Cys Thr Ser Ile Ser Gly Asp
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Leu His Ile Leu Pro Val Ala Phe Arg Gly Asp Ser Phe Thr His Thr
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Pro Pro Leu Asp Pro Gln Glu Leu Asp Ile Leu Lys Thr Val Lys Glu
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Gly Asn Lys Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu
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Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Arg Asn
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Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val
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Pro Lys Ile Pro Ser Ile Ala Thr Gly Met Val Gly Ala Leu Leu Leu
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Leu Leu Val Val Ala Leu Gly Ile Gly Leu Phe Met Arg Arg Arg His
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Arg Ile Leu Lys Glu Thr Glu Phe Lys Lys Ile Lys Val Leu Gly Ser
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Tyr Val Arg Glu His Lys Asp Asn Ile Gly Ser Gln Tyr Leu Leu Asn
            805                 810             815

Trp Cys Val Gln Ile Ala Lys Gly Met Asn Tyr Leu Glu Asp Arg Arg
            820                 825             830

Leu Val His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys Thr Pro
            835                 840             845

Gln His Val Lys Ile Thr Asp Phe Gly Leu Ala Lys Leu Leu Gly Ala
    850                 855             860

Glu Glu Lys Glu Tyr His Ala Glu Gly Gly Lys Val Pro Ile Lys Trp
865                 870             875                 880

Met Ala Leu Glu Ser Ile Leu His Arg Ile Tyr Thr His Gln Ser Asp
            885                 890             895

Val Trp Ser Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly Ser
            900                 905             910

Lys Pro Tyr Asp Gly Ile Pro Ala Ser Glu Ile Ser Ser Ile Leu Glu
            915                 920             925

Lys Gly Glu Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val Tyr
    930                 935             940

Met Ile Met Val Lys Cys Trp Met Ile Asp Ala Asp Ser Arg Pro Lys
945                 950                 955                 960

Phe Arg Glu Leu Ile Ile Glu Phe Ser Lys Met Ala Arg Asp Pro Gln
            965                 970             975

Arg Tyr Leu Val Ile Gln Gly Asp Glu Arg Met His Leu Pro Ser Pro
            980                 985             990

Thr Asp Ser Asn Phe Tyr Arg Ala Leu Met Asp Glu Glu Asp Met Asp
    995                 1000                1005

Asp Val Val Asp Ala Asp Glu Tyr Leu Ile Pro Gln Gln Gly Phe
    1010                1015            1020

Phe Ser Ser Pro Ser Thr Ser Arg Thr Pro Leu Leu Ser Ser Leu
    1025                1030            1035

Ser Ala Thr Ser Asn Asn Ser Thr Val Ala Cys Ile Asp Arg Asn
    1040                1045            1050

Gly Leu Gln Ser Cys Pro Ile Lys Glu Asp Ser Phe Leu Gln Arg
    1055                1060            1065
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Tyr Ser  Ser Asp Pro Thr Gly  Ala Leu Thr Glu Asp  Ser Ile Asp
    1070             1075              1080


Asp Thr  Phe Leu Pro Val Pro  Glu Tyr Ile Asn Gln  Ser Val Pro
    1085             1090              1095


Lys Arg  Pro Ala Gly Ser Val  Gln Asn Pro Val Tyr  His Asn Gln
    1100             1105              1110


Pro Leu  Asn Pro Ala Pro Ser  Arg Asp Pro His Tyr  Gln Asp Pro
    1115             1120              1125


His Ser  Thr Ala Val Gly Asn  Pro Glu Tyr Leu Asn  Thr Val Gln
    1130             1135              1140


Pro Thr  Cys Val Asn Ser Thr  Phe Asp Ser Pro Ala  His Trp Ala
    1145             1150              1155


Gln Lys  Gly Ser His Gln Ile  Ser Leu Asp Asn Pro  Asp Tyr Gln
    1160             1165              1170


Gln Asp  Phe Phe Pro Lys Glu  Ala Lys Pro Asn Gly  Ile Phe Lys
    1175             1180              1185


Gly Ser  Thr Ala Glu Asn Ala  Glu Tyr Leu Arg Val  Ala Pro Gln
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Ser Ser  Glu Phe Ile Gly Ala
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gtcccggagg ctaccgcctc ccagacagac gacaggtcac ctggacgcga gcctgtgtcc     180

gggtctcgtc gttgccggcg cagtcactgg gcacaaccgt gggactccgt ctgtctcgga     240

ttaatcccgg agagccagag ccaacctctc ccggtcagag atg cga ccc tca ggg     295
                                            Met Arg Pro Ser Gly
                                            1             5


acc gcg aga acc aca ctg ctg gtg ttg ctg acc gcg ctc tgc gcc gca     343
Thr Ala Arg Thr Thr Leu Leu Val Leu Leu Thr Ala Leu Cys Ala Ala
            10              15              20
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ggt ggg gcg ttg gag gaa aag aaa gtc tgc caa ggc aca agt aac agg    391
Gly Gly Ala Leu Glu Glu Lys Lys Val Cys Gln Gly Thr Ser Asn Arg
            25              30                  35

ctc acc caa ctg ggc act ttt gaa gac cac ttt ctg agc ctg cag agg    439
Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe Leu Ser Leu Gln Arg
        40              45                  50

atg tac aac aac tgt gaa gtg gtc ctt ggg aac ttg gaa att acc tat    487
Met Tyr Asn Asn Cys Glu Val Val Leu Gly Asn Leu Glu Ile Thr Tyr
        55              60                  65

gtg caa agg aat tac gac ctt tcc ttc tta aag acc atc cag gag gtg    535
Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys Thr Ile Gln Glu Val
70                  75              80                  85

gcc ggc tat gtc ctc att gcc ctc aac acc gtg gag aga atc cct ttg    583
Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val Glu Arg Ile Pro Leu
                90              95                  100

gag aac ctg cag atc atc agg gga aat gct ctt tat gaa aac acc tat    631
Glu Asn Leu Gln Ile Ile Arg Gly Asn Ala Leu Tyr Glu Asn Thr Tyr
            105             110                 115

gcc tta gcc atc ctg tcc aac tat ggg aca aac aga act ggg ctt agg    679
Ala Leu Ala Ile Leu Ser Asn Tyr Gly Thr Asn Arg Thr Gly Leu Arg
            120             125                 130

gaa ctg ccc atg cgg aac tta cag gaa atc ctg att ggt gct gtg cga    727
Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu Ile Gly Ala Val Arg
        135             140                 145

ttc agc aac aac ccc atc ctc tgc aat atg gat act atc cag tgg agg    775
Phe Ser Asn Asn Pro Ile Leu Cys Asn Met Asp Thr Ile Gln Trp Arg
150             155                 160                 165

gac atc gtc caa aac gtc ttt atg agc aac atg tca atg gac tta cag    823
Asp Ile Val Gln Asn Val Phe Met Ser Asn Met Ser Met Asp Leu Gln
                170                 175                 180

agc cat ccg agc agt tgc ccc aaa tgt gat cca agc tgt ccc aat gga    871
Ser His Pro Ser Ser Cys Pro Lys Cys Asp Pro Ser Cys Pro Asn Gly
                185                 190                 195

agc tgc tgg gga gga gga gag gag aac tgc cag aaa ttg acc aaa atc    919
Ser Cys Trp Gly Gly Gly Glu Glu Asn Cys Gln Lys Leu Thr Lys Ile
        200             205                 210

atc tgt gcc cag caa tgt tcc cat cgc tgt cgt ggc agg tcc ccc agt    967
Ile Cys Ala Gln Gln Cys Ser His Arg Cys Arg Gly Arg Ser Pro Ser
        215             220                 225

gac tgc tgc cac aac caa tgt gct gcg ggg tgt aca ggg ccc cga gag    1015
Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys Thr Gly Pro Arg Glu
230             235                 240                 245

agt gac tgt ctg gtc tgc caa aag ttc caa gat gag gcc aca tgc aaa    1063
Ser Asp Cys Leu Val Cys Gln Lys Phe Gln Asp Glu Ala Thr Cys Lys
            250             255                 260

gac acc tgc cca cca ctc atg ctg tac aac ccc acc acc tat cag atg    1111
Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro Thr Thr Tyr Gln Met
            265             270                 275

gat gtc aac cct gaa ggg aag tac agc ttt ggt gcc acc tgt gtg aag    1159
Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly Ala Thr Cys Val Lys
            280             285                 290
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aag tgc ccc cga aac tac gtg gtg aca gat cat ggc tca tgt gtc cga        1207
Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His Gly Ser Cys Val Arg
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gcc tgt ggg cct gac tac tac gaa gtg gaa gaa gat ggc atc cgc aag        1255
Ala Cys Gly Pro Asp Tyr Tyr Glu Val Glu Glu Asp Gly Ile Arg Lys
310             315             320             325

tgt aaa aaa tgt gat ggg ccc tgt cgc aaa gtt tgt aat ggc ata ggc        1303
Cys Lys Lys Cys Asp Gly Pro Cys Arg Lys Val Cys Asn Gly Ile Gly
            330             335             340

att ggt gaa ttt aaa gac aca ctc tcc ata aat gct aca aac atc aaa        1351
Ile Gly Glu Phe Lys Asp Thr Leu Ser Ile Asn Ala Thr Asn Ile Lys
            345             350             355

cac ttc aaa tac tgc act gcc atc agc ggg gac ctt cac atc ctg cca        1399
His Phe Lys Tyr Cys Thr Ala Ile Ser Gly Asp Leu His Ile Leu Pro
        360             365             370

gtg gcc ttt aag ggg gat tct ttc acg cgc act cct cct cta gac cca        1447
Val Ala Phe Lys Gly Asp Ser Phe Thr Arg Thr Pro Pro Leu Asp Pro
    375             380             385

cga gaa cta gaa att cta aaa acc gta aag gaa ata aca ggc ttt ttg        1495
Arg Glu Leu Glu Ile Leu Lys Thr Val Lys Glu Ile Thr Gly Phe Leu
390             395             400             405

ctg att cag gct tgg cct gat aac tgg act gac ctc cat gct ttc gag        1543
Leu Ile Gln Ala Trp Pro Asp Asn Trp Thr Asp Leu His Ala Phe Glu
            410             415             420

aac cta gaa ata ata cgt ggc aga aca aag caa cat ggt cag ttt tct        1591
Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln His Gly Gln Phe Ser
            425             430             435

ttg gcg gtc gtt ggc ctg aac atc aca tca ctg ggg ctg cgt tcc ctc        1639
Leu Ala Val Val Gly Leu Asn Ile Thr Ser Leu Gly Leu Arg Ser Leu
    440             445             450

aag gag atc agt gat ggg gat gtg atc att tct gga aac cga aat ttg        1687
Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser Gly Asn Arg Asn Leu
    455             460             465

tgc tac gca aac aca ata aac tgg aaa aaa ctc ttc ggg aca ccc aat        1735
Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu Phe Gly Thr Pro Asn
470             475             480             485

cag aaa acc aaa atc atg aac aac aga gct gag aaa gac tgc aag gcc        1783
Gln Lys Thr Lys Ile Met Asn Asn Arg Ala Glu Lys Asp Cys Lys Ala
            490             495             500

gtg aac cac gtc tgc aat cct tta tgc tcc tcg gaa ggc tgc tgg ggc        1831
Val Asn His Val Cys Asn Pro Leu Cys Ser Ser Glu Gly Cys Trp Gly
            505             510             515

cct gag ccc agg gac tgt gtc tcc tgc cag aat gtg agc aga ggc agg        1879
Pro Glu Pro Arg Asp Cys Val Ser Cys Gln Asn Val Ser Arg Gly Arg
        520             525             530

gag tgc gtg gag aaa tgc aac atc ctg gag ggg gaa cca agg gag ttt        1927
Glu Cys Val Glu Lys Cys Asn Ile Leu Glu Gly Glu Pro Arg Glu Phe
    535             540             545

gtg gaa aat tct gaa tgc atc cag tgc cat cca gaa tgt ctg ccc cag        1975
Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro Glu Cys Leu Pro Gln
550             555             560             565
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gcc atg aac atc acc tgt aca ggc agg gga cca gac aac tgc atc cag        2023
Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro Asp Asn Cys Ile Gln
        570              575              580

tgt gcc cac tac att gat ggc cca cac tgt gtc aag acc tgc cca gct        2071
Cys Ala His Tyr Ile Asp Gly Pro His Cys Val Lys Thr Cys Pro Ala
        585              590              595

ggc atc atg gga gag aac aac act ctg gtc tgg aag tat gca gat gcc        2119
Gly Ile Met Gly Glu Asn Asn Thr Leu Val Trp Lys Tyr Ala Asp Ala
        600              605              610
aat aat gtc tgc cac cta tgc cac gcc aac tgt acc tat gga tgt gct        2167
Asn Asn Val Cys His Leu Cys His Ala Asn Cys Thr Tyr Gly Cys Ala
        615              620              625

ggg cca ggt ctt caa gga tgt gaa gtg tgg cca tct ggg cca aag ata        2215
Gly Pro Gly Leu Gln Gly Cys Glu Val Trp Pro Ser Gly Pro Lys Ile
630              635              640              645

cca tct att gcc act ggg att gtg ggt ggc ctc ctc ttc ata gtg gtg        2263
Pro Ser Ile Ala Thr Gly Ile Val Gly Gly Leu Leu Phe Ile Val Val
                650              655              660

gtg gcc ctt ggg att ggc cta ttc atg cga aga cgt cac att gtt cga        2311
Val Ala Leu Gly Ile Gly Leu Phe Met Arg Arg Arg His Ile Val Arg
                665              670              675

aag cgt aca cta cgc cgc ctg ctt caa gag aga gag ctc gtg gaa cct        2359
Lys Arg Thr Leu Arg Arg Leu Leu Gln Glu Arg Glu Leu Val Glu Pro
        680              685              690

ctc aca ccc agc gga gaa gct cca aac caa gcc cac ttg agg ata tta        2407
Leu Thr Pro Ser Gly Glu Ala Pro Asn Gln Ala His Leu Arg Ile Leu
        695              700              705

aag gaa aca gaa ttc aaa aag atc aaa gtt ctg ggt tcg gga gca ttt        2455
Lys Glu Thr Glu Phe Lys Lys Ile Lys Val Leu Gly Ser Gly Ala Phe
710              715              720              725

ggc aca gtg tat aag ggt ctc tgg atc cca gaa ggt gag aaa gta aaa        2503
Gly Thr Val Tyr Lys Gly Leu Trp Ile Pro Glu Gly Glu Lys Val Lys
                730              735              740

atc ccg gtg gcc atc aag gag tta aga gaa gcc aca tct cca aaa gcc        2551
Ile Pro Val Ala Ile Lys Glu Leu Arg Glu Ala Thr Ser Pro Lys Ala
                745              750              755

aac aaa gaa atc ctt gac gaa gcc tat gtg atg gct agt gtg gac aac        2599
Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met Ala Ser Val Asp Asn
        760              765              770

cct cat gta tgc cgc ctc ctg ggc atc tgt ctg acc tcc act gtc cag        2647
Pro His Val Cys Arg Leu Leu Gly Ile Cys Leu Thr Ser Thr Val Gln
        775              780              785

ctc att aca cag ctc atg ccc tac ggt tgc ctc ctg gac tac gtc cga        2695
Leu Ile Thr Gln Leu Met Pro Tyr Gly Cys Leu Leu Asp Tyr Val Arg
790              795              800              805

gaa cac aag gac aac att ggc tcc cag tac ctc ctc aac tgg tgt gtg        2743
Glu His Lys Asp Asn Ile Gly Ser Gln Tyr Leu Leu Asn Trp Cys Val
                810              815              820

cag att gca aag ggc atg aac tac ctg gaa gat cgg cgt ttg gtg cac        2791
Gln Ile Ala Lys Gly Met Asn Tyr Leu Glu Asp Arg Arg Leu Val His
                825              830              835
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cgt gac ttg gca gcc agg aat gta ctg gtg aag aca cca cag cat gtc     2839
Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys Thr Pro Gln His Val
        840             845             850

aag atc aca gat ttt ggg ctg gcc aaa ctg ctt ggt gct gaa gag aaa     2887
Lys Ile Thr Asp Phe Gly Leu Ala Lys Leu Leu Gly Ala Glu Glu Lys
    855             860             865

gaa tat cat gcc gag ggg ggc aaa gtg cct atc aag tgg atg gct ttg     2935
Glu Tyr His Ala Glu Gly Gly Lys Val Pro Ile Lys Trp Met Ala Leu
870             875             880             885

gaa tca att tta cac cga att tat aca cac caa agt gat gtc tgg agc     2983
Glu Ser Ile Leu His Arg Ile Tyr Thr His Gln Ser Asp Val Trp Ser
            890             895             900

tat ggt gtc act gtg tgg gaa ctg atg acc ttt ggg tcc aag cct tat     3031
Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly Ser Lys Pro Tyr
        905             910             915

gat gga atc cca gca agt gac atc tca tcc atc cta gag aaa gga gag     3079
Asp Gly Ile Pro Ala Ser Asp Ile Ser Ser Ile Leu Glu Lys Gly Glu
        920             925             930

cgc ctt cca cag cca cct atc tgc acc atc gat gtc tac atg atc atg     3127
Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val Tyr Met Ile Met
        935             940             945

gtc aag tgc tgg atg ata gat gct gat agc cgc cca aag ttc cga gag     3175
Val Lys Cys Trp Met Ile Asp Ala Asp Ser Arg Pro Lys Phe Arg Glu
950             955             960             965

ttg att ctt gaa ttc tcc aaa atg gcc cga gac cca cag cgc tac ctt     3223
Leu Ile Leu Glu Phe Ser Lys Met Ala Arg Asp Pro Gln Arg Tyr Leu
            970             975             980

gtt atc cag ggg gat gaa aga atg cat ttg cca agc cct aca gac tcc     3271
Val Ile Gln Gly Asp Glu Arg Met His Leu Pro Ser Pro Thr Asp Ser
            985             990             995

aac ttt tac cga gcc ctg atg gat gaa gag gac atg gag gat gta         3316
Asn Phe Tyr Arg Ala Leu Met Asp Glu Glu Asp Met Glu Asp Val
            1000            1005            1010

gtt gat gct gat gag tat ctt atc cca cag caa ggc ttc ttc aac         3361
Val Asp Ala Asp Glu Tyr Leu Ile Pro Gln Gln Gly Phe Phe Asn
            1015            1020            1025

agc ccg tcc acg tcg agg act ccc ctc ttg agt tct ctg agt gca         3406
Ser Pro Ser Thr Ser Arg Thr Pro Leu Leu Ser Ser Leu Ser Ala
            1030            1035            1040

act agc aac aat tcc act gtg gct tgc att aat aga aat ggg agc         3451
Thr Ser Asn Asn Ser Thr Val Ala Cys Ile Asn Arg Asn Gly Ser
            1045            1050            1055

tgc cgt gtc aaa gaa gac gcc ttc ttg cag cgg tac agc tcc gac         3496
Cys Arg Val Lys Glu Asp Ala Phe Leu Gln Arg Tyr Ser Ser Asp
            1060            1065            1070

ccc aca ggt gct gta aca gag gac aac ata gat gac gca ttc ctc         3541
Pro Thr Gly Ala Val Thr Glu Asp Asn Ile Asp Asp Ala Phe Leu
            1075            1080            1085

cct gta cct gaa tat gta aac caa tct gtt ccc aag agg cca gca         3586
Pro Val Pro Glu Tyr Val Asn Gln Ser Val Pro Lys Arg Pro Ala
            1090            1095            1100
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- 15 -

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ggc tct gtg  cag aac cct gtc tat  cac aat cag ccc ctg  cat cca      3631
Gly Ser Val  Gln Asn Pro Val Tyr  His Asn Gln Pro Leu  His Pro
        1105                 1110                 1115
gct cct gga  aga gac ctg cat tat  caa aat ccc cac agc  aat gca      3676
Ala Pro Gly  Arg Asp Leu His Tyr  Gln Asn Pro His Ser  Asn Ala
        1120                 1125                 1130

gtg ggc aac  cct gag tat ctc aac  act gcc cag cct acc  tgt ctc      3721
Val Gly Asn  Pro Glu Tyr Leu Asn  Thr Ala Gln Pro Thr  Cys Leu
        1135                 1140                 1145

agt agt ggg  ttt aac agc cct gca  ctc tgg atc cag aaa  ggc agt      3766
Ser Ser Gly  Phe Asn Ser Pro Ala  Leu Trp Ile Gln Lys  Gly Ser
        1150                 1155                 1160

cac caa atg  agc cta gac aac cct  gac tac cag cag gac  ttc ttc      3811
His Gln Met  Ser Leu Asp Asn Pro  Asp Tyr Gln Gln Asp  Phe Phe
        1165                 1170                 1175

ccc aag gaa  acc aag cca aat ggc  ata ttt aag ggc ccc  aca gct      3856
Pro Lys Glu  Thr Lys Pro Asn Gly  Ile Phe Lys Gly Pro  Thr Ala
        1180                 1185                 1190

gaa aat gca  gag tac cta cgg gtg  gca cct cca agc agt  gag ttt      3901
Glu Asn Ala  Glu Tyr Leu Arg Val  Ala Pro Pro Ser Ser  Glu Phe
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att gga gca  tga caagaaggg catcatacca gctataaaat gtctggactt      3953
Ile Gly Ala
        1210
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gagaagagga atgacggggt agaattttcc ctcagacgta ctttttatat aaatatgtcc   4553

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caagccactc taactgtagc aatgaaaccc tagtattttt gtactttgaa atactttctt    5933

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Ala Leu Cys Ala Ala Gly Gly Ala Leu Glu Glu Lys Lys Val Cys Gln
            20              25               30


Gly Thr Ser Asn Arg Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe
        35              40               45


Leu Ser Leu Gln Arg Met Tyr Asn Asn Cys Glu Val Val Leu Gly Asn
    50              55               60


Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys
65              70               75               80


Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val
                85               90               95


Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Ala Leu
            100             105             110
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Tyr Glu Asn Thr Tyr Ala Leu Ala Ile Leu Ser Asn Tyr Gly Thr Asn
        115             120             125


Arg Thr Gly Leu Arg Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu
    130             135             140


Ile Gly Ala Val Arg Phe Ser Asn Asn Pro Ile Leu Cys Asn Met Asp
145             150             155             160


Thr Ile Gln Trp Arg Asp Ile Val Gln Asn Val Phe Met Ser Asn Met
            165             170             175


Ser Met Asp Leu Gln Ser His Pro Ser Ser Cys Pro Lys Cys Asp Pro
            180             185             190


Ser Cys Pro Asn Gly Ser Cys Trp Gly Gly Gly Glu Glu Asn Cys Gln
        195             200             205


Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser His Arg Cys Arg
    210             215             220


Gly Arg Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys
225             230             235             240


Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Gln Lys Phe Gln Asp
            245             250             255


Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro
        260             265             270


Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly
    275             280             285


Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His
    290             295             300


Gly Ser Cys Val Arg Ala Cys Gly Pro Asp Tyr Tyr Glu Val Glu Glu
305             310             315             320


Asp Gly Ile Arg Lys Cys Lys Lys Cys Asp Gly Pro Cys Arg Lys Val
            325             330             335


Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Thr Leu Ser Ile Asn
        340             345             350


Ala Thr Asn Ile Lys His Phe Lys Tyr Cys Thr Ala Ile Ser Gly Asp
    355             360             365


Leu His Ile Leu Pro Val Ala Phe Lys Gly Asp Ser Phe Thr Arg Thr
    370             375             380
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Pro Pro Leu Asp Pro Arg Glu Leu Glu Ile Leu Lys Thr Val Lys Glu
385             390             395                 400

Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Asp Asn Trp Thr Asp
                405             410             415

Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln
                420             425             430

His Gly Gln Phe Ser Leu Ala Val Val Gly Leu Asn Ile Thr Ser Leu
        435             440             445

Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser
    450             455             460

Gly Asn Arg Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu
465             470             475                 480

Phe Gly Thr Pro Asn Gln Lys Thr Lys Ile Met Asn Asn Arg Ala Glu
                485             490             495

Lys Asp Cys Lys Ala Val Asn His Val Cys Asn Pro Leu Cys Ser Ser
            500             505             510

Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Gln Asn
        515             520             525

Val Ser Arg Gly Arg Glu Cys Val Glu Lys Cys Asn Ile Leu Glu Gly
    530             535             540

Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro
545             550             555                 560

Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro
            565             570             575

Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val
            580             585             590

Lys Thr Cys Pro Ala Gly Ile Met Gly Glu Asn Asn Thr Leu Val Trp
        595             600             605

Lys Tyr Ala Asp Ala Asn Asn Val Cys His Leu Cys His Ala Asn Cys
    610             615             620

Thr Tyr Gly Cys Ala Gly Pro Gly Leu Gln Gly Cys Glu Val Trp Pro
625             630             635                 640

Ser Gly Pro Lys Ile Pro Ser Ile Ala Thr Gly Ile Val Gly Gly Leu
                645             650             655
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Leu Phe Ile Val Val Val Ala Leu Gly Ile Gly Leu Phe Met Arg Arg
        660             665             670

Arg His Ile Val Arg Lys Arg Thr Leu Arg Arg Leu Leu Gln Glu Arg
        675             680             685

Glu Leu Val Glu Pro Leu Thr Pro Ser Gly Glu Ala Pro Asn Gln Ala
    690             695             700

His Leu Arg Ile Leu Lys Glu Thr Glu Phe Lys Lys Ile Lys Val Leu
705             710             715             720

Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys Gly Leu Trp Ile Pro Glu
            725             730             735

Gly Glu Lys Val Lys Ile Pro Val Ala Ile Lys Glu Leu Arg Glu Ala
        740             745             750

Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met
        755             760             765

Ala Ser Val Asp Asn Pro His Val Cys Arg Leu Leu Gly Ile Cys Leu
    770             775             780

Thr Ser Thr Val Gln Leu Ile Thr Gln Leu Met Pro Tyr Gly Cys Leu
785             790             795             800

Leu Asp Tyr Val Arg Glu His Lys Asp Asn Ile Gly Ser Gln Tyr Leu
            805             810             815

Leu Asn Trp Cys Val Gln Ile Ala Lys Gly Met Asn Tyr Leu Glu Asp
            820             825             830

Arg Arg Leu Val His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys
        835             840             845

Thr Pro Gln His Val Lys Ile Thr Asp Phe Gly Leu Ala Lys Leu Leu
    850             855             860

Gly Ala Glu Glu Lys Glu Tyr His Ala Glu Gly Gly Lys Val Pro Ile
865             870             875             880

Lys Trp Met Ala Leu Glu Ser Ile Leu His Arg Ile Tyr Thr His Gln
            885             890             895

Ser Asp Val Trp Ser Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe
            900             905             910

Gly Ser Lys Pro Tyr Asp Gly Ile Pro Ala Ser Asp Ile Ser Ser Ile
        915             920             925
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Leu Glu Lys Gly Glu Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp
    930                 935             940

Val Tyr Met Ile Met Val Lys Cys Trp Met Ile Asp Ala Asp Ser Arg
945                 950             955             960

Pro Lys Phe Arg Glu Leu Ile Leu Glu Phe Ser Lys Met Ala Arg Asp
            965                 970             975

Pro Gln Arg Tyr Leu Val Ile Gln Gly Asp Glu Arg Met His Leu Pro
            980                 985             990

Ser Pro Thr Asp Ser Asn Phe Tyr Arg Ala Leu Met Asp Glu Glu Asp
        995                 1000            1005

Met Glu Asp Val Val Asp Ala Asp Glu Tyr Leu Ile Pro Gln Gln
    1010            1015            1020

Gly Phe Phe Asn Ser Pro Ser Thr Ser Arg Thr Pro Leu Leu Ser
    1025            1030            1035

Ser Leu Ser Ala Thr Ser Asn Asn Ser Thr Val Ala Cys Ile Asn
    1040            1045            1050

Arg Asn Gly Ser Cys Arg Val Lys Glu Asp Ala Phe Leu Gln Arg
    1055            1060            1065

Tyr Ser Ser Asp Pro Thr Gly Ala Val Thr Glu Asp Asn Ile Asp
    1070            1075            1080

Asp Ala Phe Leu Pro Val Pro Glu Tyr Val Asn Gln Ser Val Pro
    1085            1090            1095

Lys Arg Pro Ala Gly Ser Val Gln Asn Pro Val Tyr His Asn Gln
    1100            1105            1110

Pro Leu His Pro Ala Pro Gly Arg Asp Leu His Tyr Gln Asn Pro
    1115            1120            1125

His Ser Asn Ala Val Gly Asn Pro Glu Tyr Leu Asn Thr Ala Gln
    1130            1135            1140

Pro Thr Cys Leu Ser Ser Gly Phe Asn Ser Pro Ala Leu Trp Ile
    1145            1150            1155

Gln Lys Gly Ser His Gln Met Ser Leu Asp Asn Pro Asp Tyr Gln
    1160            1165            1170

Gln Asp Phe Phe Pro Lys Glu Thr Lys Pro Asn Gly Ile Phe Lys
    1175            1180            1185
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Gly Pro   Thr Ala Glu Asn Ala  Glu Tyr Leu Arg Val  Ala Pro Pro
    1190              1195              1200


Ser Ser  Glu Phe Ile Gly Ala
    1205              1210



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gtcccggagg ctaccgcctc ccagacagac gaca ggtcac ctggacgcga gcctgtgtcc       180

gggtctcgtc gttgccggcg cagtcactgg gcac aaccgt gggactccgt ctgtctcgga       240

ttaatcccgg agagccagag ccaacctctc ccgg tcagag atg cga ccc tca ggg        295
                                                  Met Arg Pro Ser Gly
                                                  1               5


acc gcg aga acc aca ctg ctg gtg ttg ctg acc gcg ctc tgc gcc gca        343
Thr Ala Arg Thr Thr Leu Leu Val Leu Leu Thr Ala Leu Cys Ala Ala
            10              15              20

ggt ggg gcg ttg gag gaa aag aaa gtc tgc caa ggc aca agt aac agg        391
Gly Gly Ala Leu Glu Glu Lys Lys Val Cys Gln Gly Thr Ser Asn Arg
        25              30              35

ctc acc caa ctg ggc act ttt gaa gac cac ttt ctg agc ctg cag agg        439
Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe Leu Ser Leu Gln Arg
        40              45              50

atg tac aac aac tgt gaa gtg gtc ctt ggg aac ttg gaa att acc tat        487
Met Tyr Asn Asn Cys Glu Val Val Leu Gly Asn Leu Glu Ile Thr Tyr
    55              60              65

gtg caa agg aat tac gac ctt tcc ttc tta aag acc atc cag gag gtg        535
Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys Thr Ile Gln Glu Val
70              75              80              85

gcc ggc tat gtc ctc att gcc ctc aac acc gtg gag aga atc cct ttg        583
Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val Glu Arg Ile Pro Leu
            90              95              100

gag aac ctg cag atc atc agg gga aat gct ctt tat gaa aac acc tat        631
Glu Asn Leu Gln Ile Ile Arg Gly Asn Ala Leu Tyr Glu Asn Thr Tyr
        105             110             115

gcc tta gcc atc ctg tcc aac tat ggg aca aac aga act ggg ctt agg        679
Ala Leu Ala Ile Leu Ser Asn Tyr Gly Thr Asn Arg Thr Gly Leu Arg
        120             125             130

gaa ctg ccc atg cgg aac tta cag gaa atc ctg att ggt gct gtg cga       727
Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu Ile Gly Ala Val Arg
    135             140             145

ttc agc aac aac ccc atc ctc tgc aat atg gat act atc cag tgg agg       775
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Phe Ser Asn Asn Pro Ile Leu Cys Asn Met Asp Thr Ile Gln Trp Arg
150                 155                 160                 165

gac atc gtc caa aac gtc ttt atg agc aac atg tca atg gac tta cag       823
Asp Ile Val Gln Asn Val Phe Met Ser Asn Met Ser Met Asp Leu Gln
                170                 175                 180

agc cat ccg agc agt tgc ccc aaa tgt gat cca agc tgt ccc aat gga       871
Ser His Pro Ser Ser Cys Pro Lys Cys Asp Pro Ser Cys Pro Asn Gly
                185                 190                 195

agc tgc tgg gga gga gga gag gag aac tgc cag aaa ttg acc aaa atc       919
Ser Cys Trp Gly Gly Gly Glu Glu Asn Cys Gln Lys Leu Thr Lys Ile
                200                 205                 210

atc tgt gcc cag caa tgt tcc cat cgc tgt cgt ggc agg tcc ccc agt       967
Ile Cys Ala Gln Gln Cys Ser His Arg Cys Arg Gly Arg Ser Pro Ser
            215                 220                 225

gac tgc tgc cac aac caa tgt gct gcg ggg tgt aca ggg ccc cga gag      1015
Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys Thr Gly Pro Arg Glu
230                 235                 240                 245

agt gac tgt ctg gtc tgc caa aag ttc caa gat gag gcc aca tgc aaa      1063
Ser Asp Cys Leu Val Cys Gln Lys Phe Gln Asp Glu Ala Thr Cys Lys
                250                 255                 260

gac acc tgc cca cca ctc atg ctg tac aac ccc acc acc tat cag atg      1111
Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro Thr Thr Tyr Gln Met
                265                 270                 275

gat gtc aac cct gaa ggg aag tac agc ttt ggt gcc acc tgt gtg aag      1159
Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly Ala Thr Cys Val Lys
                280                 285                 290

aag tgc ccc cga aac tac gtg gtg aca gat cat ggc tca tgt gtc cga      1207
Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His Gly Ser Cys Val Arg
            295                 300                 305

gcc tgt ggg cct gac tac tac gaa gtg gaa gaa gat ggc atc cgc aag      1255
Ala Cys Gly Pro Asp Tyr Tyr Glu Val Glu Glu Asp Gly Ile Arg Lys
310                 315                 320                 325

tgt aaa aaa tgt gat ggg ccc tgt cgc aaa gtt tgt aat ggc ata ggc      1303
Cys Lys Lys Cys Asp Gly Pro Cys Arg Lys Val Cys Asn Gly Ile Gly
                330                 335                 340

att ggt gaa ttt aaa gac aca ctc tcc ata aat gct aca aac atc aaa      1351
Ile Gly Glu Phe Lys Asp Thr Leu Ser Ile Asn Ala Thr Asn Ile Lys
                345                 350                 355

cac ttc aaa tac tgc act gcc atc agc ggg gac ctt cac atc ctg cca      1399
His Phe Lys Tyr Cys Thr Ala Ile Ser Gly Asp Leu His Ile Leu Pro
                360                 365                 370

gtg gcc ttt aag ggg gat tct ttc acg cgc act cct cct cta gac cca      1447
Val Ala Phe Lys Gly Asp Ser Phe Thr Arg Thr Pro Pro Leu Asp Pro
375                 380                 385

cga gaa cta gaa att cta aaa acc gta aag gaa ata aca ggc ttt ttg      1495
Arg Glu Leu Glu Ile Leu Lys Thr Val Lys Glu Ile Thr Gly Phe Leu
390                 395                 400                 405

ctg att cag gct tgg cct gat aac tgg act gac ctc cat gct ttc gag      1543
Leu Ile Gln Ala Trp Pro Asp Asn Trp Thr Asp Leu His Ala Phe Glu
                410                 415                 420

aac cta gaa ata ata cgt ggc aga aca aag caa cat ggt cag ttt tct      1591
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          Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln His Gly Gln Phe Ser
                      425                 430             435

ttg gcg gtc gtt ggc ctg aac atc aca tca ctg ggg ctg cgt tcc ctc            1639
Leu Ala Val Val Gly Leu Asn Ile Thr Ser Leu Gly Leu Arg Ser Leu
        440                 445                 450

aag gag atc agt gat ggg gat gtg atc att tct gga aac cga aat ttg            1687
Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser Gly Asn Arg Asn Leu
        455                 460                 465

tgc tac gca aac aca ata aac tgg aaa aaa ctc ttc ggg aca ccc aat           1735
Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu Phe Gly Thr Pro Asn
470                 475                 480                 485

cag aaa acc aaa atc atg aac aac aga gct gag aaa gac tgc aag gcc           1783
Gln Lys Thr Lys Ile Met Asn Asn Arg Ala Glu Lys Asp Cys Lys Ala
                490                 495                 500

gtg aac cac gtc tgc aat cct tta tgc tcc tcg gaa ggc tgc tgg ggc          1831
Val Asn His Val Cys Asn Pro Leu Cys Ser Ser Glu Gly Cys Trp Gly
                505                 510                 515

cct gag ccc agg gac tgt gtc tcc tgc cag aat gtg agc aga ggc agg          1879
Pro Glu Pro Arg Asp Cys Val Ser Cys Gln Asn Val Ser Arg Gly Arg
                520                 525                 530

gag tgc gtg gag aaa tgc aac atc ctg gag ggg gaa cca agg gag ttt          1927
Glu Cys Val Glu Lys Cys Asn Ile Leu Glu Gly Glu Pro Arg Glu Phe
        535                 540                 545

gtg gaa aat tct gaa tgc atc cag tgc cat cca gaa tgt ctg ccc cag          1975
Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro Glu Cys Leu Pro Gln
550                 555                 560                 565

gcc atg aac atc acc tgt aca ggc agg gga cca gac aac tgc atc cag          2023
Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro Asp Asn Cys Ile Gln
                570                 575                 580

tgt gcc cac tac att gat ggc cca cac tgt gtc aag acc tgc cca gct          2071
Cys Ala His Tyr Ile Asp Gly Pro His Cys Val Lys Thr Cys Pro Ala
                585                 590                 595

ggc atc atg gga gag aac aac act ctg gtc tgg aag tat gca gat gcc          2119
Gly Ile Met Gly Glu Asn Asn Thr Leu Val Trp Lys Tyr Ala Asp Ala
            600                 605                 610

aat aat gtc tgc cac cta tgc cac gcc aac tgt acc tat gga tgt gct          2167
Asn Asn Val Cys His Leu Cys His Ala Asn Cys Thr Tyr Gly Cys Ala
            615                 620                 625

ggg cca ggt ctt caa gga tgt gaa gtg tgg cca tct ggg cca aag ata          2215
Gly Pro Gly Leu Gln Gly Cys Glu Val Trp Pro Ser Gly Pro Lys Ile
630                 635                 640                 645

cca tct att gcc act ggg att gtg ggt ggc ctc ctc ttc ata gtg gtg          2263
Pro Ser Ile Ala Thr Gly Ile Val Gly Gly Leu Leu Phe Ile Val Val
                650                 655                 660

gtg gcc ctt ggg att ggc cta ttc atg cga aga cgt cac att gtt cga          2311
Val Ala Leu Gly Ile Gly Leu Phe Met Arg Arg Arg His Ile Val Arg
                665                 670                 675

aag cgt aca cta cgc cgc ctg ctt caa gag aga gag ctc gtg gaa cct          2359
Lys Arg Thr Leu Arg Arg Leu Leu Gln Glu Arg Glu Leu Val Glu Pro
        680                 685                 690

ctc aca ccc agc gga gaa gct cca aac caa gcc cac ttg agg ata tta          2407
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Leu Thr Pro Ser Gly Glu Ala Pro Asn Gln Ala His Leu Arg Ile Leu
    695             700             705

aag gaa aca gaa ttc aaa aag atc aaa gtt ctg ggt tcg gga gca ttt      2455
Lys Glu Thr Glu Phe Lys Lys Ile Lys Val Leu Gly Ser Gly Ala Phe
710             715             720             725

ggc aca gtg tat aag ggt ctc tgg atc cca gaa ggt gag aaa gta aaa      2503
Gly Thr Val Tyr Lys Gly Leu Trp Ile Pro Glu Gly Glu Lys Val Lys
                730             735             740

atc ccg gtg gcc atc aag gag tta aga gaa gcc aca tct cca aaa gcc      2551
Ile Pro Val Ala Ile Lys Glu Leu Arg Glu Ala Thr Ser Pro Lys Ala
            745             750             755

aac aaa gaa atc ctt gac gaa gcc tat gtg atg gct agt gtg gac aac      2599
Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met Ala Ser Val Asp Asn
            760             765             770

cct cat gta tgc cgc ctc ctg ggc atc tgt ctg acc tcc act gtc cag      2647
Pro His Val Cys Arg Leu Leu Gly Ile Cys Leu Thr Ser Thr Val Gln
    775             780             785

ctc att aca cag ctc atg ccc tac ggt tgc ctc ctg gac tac gtc cga      2695
Leu Ile Thr Gln Leu Met Pro Tyr Gly Cys Leu Leu Asp Tyr Val Arg
790             795             800             805

gaa cac aag gac aac att ggc tcc cag tac ctc ctc aac tgg tgt gtg      2743
Glu His Lys Asp Asn Ile Gly Ser Gln Tyr Leu Leu Asn Trp Cys Val
            810             815             820

cag att gca aag ggc atg aac tac ctg gaa gat cgg cgt ttg gtg cac      2791
Gln Ile Ala Lys Gly Met Asn Tyr Leu Glu Asp Arg Arg Leu Val His
            825             830             835

cgt gac ttg gca gcc agg aat gta ctg gtg aag aca cca cag cat gtc      2839
Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys Thr Pro Gln His Val
            840             845             850

aag atc aca ggt ttt ggg ctg gcc aaa ctg ctt ggt gct gaa gag aaa      2887
Lys Ile Thr Gly Phe Gly Leu Ala Lys Leu Leu Gly Ala Glu Glu Lys
    855             860             865

gaa tat cat gcc gag ggg ggc aaa gtg cct atc aag tgg atg gct ttg      2935
Glu Tyr His Ala Glu Gly Gly Lys Val Pro Ile Lys Trp Met Ala Leu
870             875             880             885

gaa tca att tta cac cga att tat aca cac caa agt gat gtc tgg agc      2983
Glu Ser Ile Leu His Arg Ile Tyr Thr His Gln Ser Asp Val Trp Ser
            890             895             900

tat ggt gtc act gtg tgg gaa ctg atg acc ttt ggg tcc aag cct tat      3031
Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly Ser Lys Pro Tyr
            905             910             915

gat gga atc cca gca agt gac atc tca tcc atc cta gag aaa gga gag      3079
Asp Gly Ile Pro Ala Ser Asp Ile Ser Ser Ile Leu Glu Lys Gly Glu
            920             925             930

cgc ctt cca cag cca cct atc tgc acc atc gat gtc tac atg atc atg      3127
Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val Tyr Met Ile Met
    935             940             945

gtc aag tgc tgg atg ata gat gct gat agc cgc cca aag ttc cga gag      3175
Val Lys Cys Trp Met Ile Asp Ala Asp Ser Arg Pro Lys Phe Arg Glu
950             955             960             965

ttg att ctt gaa ttc tcc aaa atg gcc cga gac cca cag cgc tac ctt      3223
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      Leu Ile Leu Glu Phe Ser Lys Met Ala Arg Asp Pro Gln Arg Tyr Leu
                    970                 975                 980

      gtt atc cag ggg gat gaa aga atg cat ttg cca agc cct aca gac tcc      3271
      Val Ile Gln Gly Asp Glu Arg Met His Leu Pro Ser Pro Thr Asp Ser
                        985                 990                 995

      aac ttt tac cga gcc ctg atg gat gaa gag gac atg gag gat gta          3316
      Asn Phe Tyr Arg Ala Leu Met Asp Glu Glu Asp Met Glu Asp Val
                1000                1005                1010

      gtt gat gct gat gag tat ctt atc cca cag caa ggc ttc ttc aac          3361
      Val Asp Ala Asp Glu Tyr Leu Ile Pro Gln Gln Gly Phe Phe Asn
                1015                1020                1025

      agc ccg tcc acg tcg agg act ccc ctc ttg agt tct ctg agt gca          3406
      Ser Pro Ser Thr Ser Arg Thr Pro Leu Leu Ser Ser Leu Ser Ala
                1030                1035                1040

      act agc aac aat tcc act gtg gct tgc att aat aga aat ggg agc          3451
      Thr Ser Asn Asn Ser Thr Val Ala Cys Ile Asn Arg Asn Gly Ser
                1045                1050                1055

      tgc cgt gtc aaa gaa gac gcc ttc ttg cag cgg tac agc tcc gac          3496
      Cys Arg Val Lys Glu Asp Ala Phe Leu Gln Arg Tyr Ser Ser Asp
                1060                1065                1070

      ccc aca ggt gct gta aca gag gac aac ata gat gac gca ttc ctc          3541
      Pro Thr Gly Ala Val Thr Glu Asp Asn Ile Asp Asp Ala Phe Leu
                1075                1080                1085

      cct gta cct gaa tat gta aac caa tct gtt ccc aag agg cca gca          3586
      Pro Val Pro Glu Tyr Val Asn Gln Ser Val Pro Lys Arg Pro Ala
                1090                1095                1100

      ggc tct gtg cag aac cct gtc tat cac aat cag ccc ctg cat cca          3631
      Gly Ser Val Gln Asn Pro Val Tyr His Asn Gln Pro Leu His Pro
                1105                1110                1115

      gct cct gga aga gac ctg cat tat caa aat ccc cac agc aat gca          3676
      Ala Pro Gly Arg Asp Leu His Tyr Gln Asn Pro His Ser Asn Ala
                1120                1125                1130

      gtg ggc aac cct gag tat ctc aac act gcc cag cct acc tgt ctc          3721
      Val Gly Asn Pro Glu Tyr Leu Asn Thr Ala Gln Pro Thr Cys Leu
                1135                1140                1145

      agt agt ggg ttt aac agc cct gca ctc tgg atc cag aaa ggc agt          3766
      Ser Ser Gly Phe Asn Ser Pro Ala Leu Trp Ile Gln Lys Gly Ser
                1150                1155                1160

      cac caa atg agc cta gac aac cct gac tac cag cag gac ttc ttc          3811
      His Gln Met Ser Leu Asp Asn Pro Asp Tyr Gln Gln Asp Phe Phe
                1165                1170                1175

      ccc aag gaa acc aag cca aat ggc ata ttt aag ggc ccc aca gct          3856
      Pro Lys Glu Thr Lys Pro Asn Gly Ile Phe Lys Gly Pro Thr Ala
                1180                1185                1190

      gaa aat gca gag tac cta cgg gtg gca cct cca agc agt gag ttt          3901
      Glu Asn Ala Glu Tyr Leu Arg Val Ala Pro Pro Ser Ser Glu Phe
                1195                1200                1205

      att gga gca tga caagaagggg catcatacca gctataaaat gtctggactt        3953
      Ile Gly Ala
                1210

      tctagaatcc caggaccaac tatggcagca cctccacttc tggtagccat gcccacgctg   4013
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tgtcaaatgt cactcagact ggctttaaag cataactctg atgggctttg tcactgagcc        4073

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aactttggga ttcttgtctt tattgatttg attgatgcac tcttgtagtc tggtacacag        4313

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gagaagagga atgacggggt agaattttcc ctcagacgta ctttttatat aaatatgtcc        4553

ctggcaccta acacgcgcta gtttaccagt gttttctatt agacttcctt ctatgttttc        4613

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aggctatctg acagaggtcg caacccgcag gttgagagcc actgccttca aggctttaat        5513

caagagagta gtgagctgag ggctttactg gtaagtcagg ggcaagtcca actcaatcat        5573

cctcacatac tggctgctcc ctcaggcctg agaatgaggc ttgcagcatc ctctggtttc        5633

ctaaccgtta tccatccctg actctcatct ctgaaaatag atgtcatcca tgaaattaag        5693

gagtgagaat attaagcagc atttatagag ctcaaaattc catgtcatca ccaggaagtg        5753

ccatgttgat cacagagaac acagaggaga catatagaca gggtttttgct caaaattggg        5813

atatagaatg agcctgtcag gtacctatca ggagcggtaa tccgtgagag agaaccgttg        5873

caagccactc taactgtagc aatgaaaccc tagtattttt gtactttgaa atactttctt        5933

ataacaaaat aaagtagcaa aaaaactgtt caaaaaaaaa aaaaaaaaaa cccgaattc        5992
```

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```
<210>    6
<211>    1210
<212>    PRT
<213>    Mus musculus

<400>    6

Met Arg Pro Ser Gly Thr Ala Arg Thr Thr Leu Leu Val Leu Leu Thr
1               5                   10                  15


Ala Leu Cys Ala Ala Gly Gly Ala Leu Glu Glu Lys Lys Val Cys Gln
            20                  25                  30


Gly Thr Ser Asn Arg Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe
        35                  40                  45

Leu Ser Leu Gln Arg Met Tyr Asn Asn Cys Glu Val Val Leu Gly Asn
    50                  55                  60


Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys
65                  70                  75                  80


Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val
                85                  90                  95


Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Ala Leu
            100                 105                 110


Tyr Glu Asn Thr Tyr Ala Leu Ala Ile Leu Ser Asn Tyr Gly Thr Asn
        115                 120                 125


Arg Thr Gly Leu Arg Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu
    130                 135                 140


Ile Gly Ala Val Arg Phe Ser Asn Asn Pro Ile Leu Cys Asn Met Asp
145                 150                 155                 160


Thr Ile Gln Trp Arg Asp Ile Val Gln Asn Val Phe Met Ser Asn Met
                165                 170                 175


Ser Met Asp Leu Gln Ser His Pro Ser Ser Cys Pro Lys Cys Asp Pro
            180                 185                 190


Ser Cys Pro Asn Gly Ser Cys Trp Gly Gly Gly Glu Glu Asn Cys Gln
            195                 200                 205


Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser His Arg Cys Arg
    210                 215                 220


Gly Arg Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys
225                 230                 235                 240
```

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```
Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Gln Lys Phe Gln Asp
              245             250             255


Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro
          260             265             270


Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly
      275             280             285


Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His
  290             295             300

Gly Ser Cys Val Arg Ala Cys Gly Pro Asp Tyr Tyr Glu Val Glu Glu
305             310             315             320


Asp Gly Ile Arg Lys Cys Lys Lys Cys Asp Gly Pro Cys Arg Lys Val
              325             330             335


Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Thr Leu Ser Ile Asn
              340             345             350


Ala Thr Asn Ile Lys His Phe Lys Tyr Cys Thr Ala Ile Ser Gly Asp
      355             360             365


Leu His Ile Leu Pro Val Ala Phe Lys Gly Asp Ser Phe Thr Arg Thr
      370             375             380


Pro Pro Leu Asp Pro Arg Glu Leu Glu Ile Leu Lys Thr Val Lys Glu
385             390             395             400


Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Asp Asn Trp Thr Asp
              405             410             415


Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln
          420             425             430


His Gly Gln Phe Ser Leu Ala Val Val Gly Leu Asn Ile Thr Ser Leu
      435             440             445


Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser
  450             455             460


Gly Asn Arg Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu
465             470             475             480


Phe Gly Thr Pro Asn Gln Lys Thr Lys Ile Met Asn Asn Arg Ala Glu
              485             490             495


Lys Asp Cys Lys Ala Val Asn His Val Cys Asn Pro Leu Cys Ser Ser
              500             505             510
```

```
Glu Gly Cys Trp Gly Pro Glu Pro Arg  Asp Cys Val Ser Cys Gln Asn
        515             520             525

Val Ser Arg Gly Arg Glu Cys Val Glu  Lys Cys Asn Ile Leu Glu Gly
        530             535             540

Glu Pro Arg Glu Phe Val Glu Asn Ser  Glu Cys Ile Gln Cys His Pro
545             550             555             560

Glu Cys Leu Pro Gln Ala Met Asn Ile  Thr Cys Thr Gly Arg Gly Pro
            565             570             575

Asp Asn Cys Ile Gln Cys Ala His Tyr  Ile Asp Gly Pro His Cys Val
            580             585             590

Lys Thr Cys Pro Ala Gly Ile Met Gly  Glu Asn Asn Thr Leu Val Trp
        595             600             605

Lys Tyr Ala Asp Ala Asn Asn Val Cys  His Leu Cys His Ala Asn Cys
    610             615             620

Thr Tyr Gly Cys Ala Gly Pro Gly Leu  Gln Gly Cys Glu Val Trp Pro
625             630             635             640

Ser Gly Pro Lys Ile Pro Ser Ile Ala  Thr Gly Ile Val Gly Gly Leu
            645             650             655

Leu Phe Ile Val Val Val Ala Leu Gly  Ile Gly Leu Phe Met Arg Arg
            660             665             670

Arg His Ile Val Arg Lys Arg Thr Leu  Arg Arg Leu Leu Gln Glu Arg
        675             680             685

Glu Leu Val Glu Pro Leu Thr Pro Ser  Gly Glu Ala Pro Asn Gln Ala
    690             695             700

His Leu Arg Ile Leu Lys Glu Thr Glu  Phe Lys Lys Ile Lys Val Leu
705             710             715             720

Gly Ser Gly Ala Phe Gly Thr Val Tyr  Lys Gly Leu Trp Ile Pro Glu
            725             730             735

Gly Glu Lys Val Lys Ile Pro Val Ala  Ile Lys Glu Leu Arg Glu Ala
        740             745             750

Thr Ser Pro Lys Ala Asn Lys Glu Ile  Leu Asp Glu Ala Tyr Val Met
        755             760             765

Ala Ser Val Asp Asn Pro His Val Cys  Arg Leu Leu Gly Ile Cys Leu
    770             775             780
```

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```
Thr Ser Thr Val Gln Leu Ile Thr Gln Leu Met Pro Tyr Gly Cys Leu
785             790             795             800

Leu Asp Tyr Val Arg Glu His Lys Asp Asn Ile Gly Ser Gln Tyr Leu
            805             810             815

Leu Asn Trp Cys Val Gln Ile Ala Lys Gly Met Asn Tyr Leu Glu Asp
        820             825             830

Arg Arg Leu Val His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys
    835             840             845

Thr Pro Gln His Val Lys Ile Thr Gly Phe Gly Leu Ala Lys Leu Leu
    850             855             860

Gly Ala Glu Glu Lys Glu Tyr His Ala Glu Gly Gly Lys Val Pro Ile
865             870             875             880

Lys Trp Met Ala Leu Glu Ser Ile Leu His Arg Ile Tyr Thr His Gln
        885             890             895

Ser Asp Val Trp Ser Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe
        900             905             910

Gly Ser Lys Pro Tyr Asp Gly Ile Pro Ala Ser Asp Ile Ser Ser Ile
    915             920             925

Leu Glu Lys Gly Glu Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp
    930             935             940

Val Tyr Met Ile Met Val Lys Cys Trp Met Ile Asp Ala Asp Ser Arg
945             950             955             960

Pro Lys Phe Arg Glu Leu Ile Leu Glu Phe Ser Lys Met Ala Arg Asp
            965             970             975

Pro Gln Arg Tyr Leu Val Ile Gln Gly Asp Glu Arg Met His Leu Pro
    980             985             990

Ser Pro Thr Asp Ser Asn Phe Tyr Arg Ala Leu Met Asp Glu Glu Asp
    995             1000            1005

Met Glu Asp Val Val Asp Ala Asp Glu Tyr Leu Ile Pro Gln Gln
    1010            1015            1020

Gly Phe Phe Asn Ser Pro Ser Thr Ser Arg Thr Pro Leu Leu Ser
    1025            1030            1035

Ser Leu Ser Ala Thr Ser Asn Asn Ser Thr Val Ala Cys Ile Asn
    1040            1045            1050
```

```
Arg Asn  Gly Ser Cys Arg Val  Lys Glu Asp Ala Phe  Leu Gln Arg
    1055                1060            1065
```

```
Tyr Ser  Ser Asp Pro Thr Gly  Ala Val Thr Glu Asp  Asn Ile Asp
    1070                1075            1080
```

```
Asp Ala  Phe Leu Pro Val Pro  Glu Tyr Val Asn Gln  Ser Val Pro
    1085                1090            1095
```

```
Lys Arg  Pro Ala Gly Ser Val  Gln Asn Pro Val Tyr  His Asn Gln
    1100                1105            1110
```

```
Pro Leu  His Pro Ala Pro Gly  Arg Asp Leu His Tyr  Gln Asn Pro
    1115                1120            1125
```

```
His Ser  Asn Ala Val Gly Asn  Pro Glu Tyr Leu Asn  Thr Ala Gln
    1130                1135            1140
```

```
Pro Thr  Cys Leu Ser Ser Gly  Phe Asn Ser Pro Ala  Leu Trp Ile
    1145                1150            1155
```

```
Gln Lys  Gly Ser His Gln Met  Ser Leu Asp Asn Pro  Asp Tyr Gln
    1160                1165            1170
```

```
Gln Asp  Phe Phe Pro Lys Glu  Thr Lys Pro Asn Gly  Ile Phe Lys
    1175                1180            1185
```

```
Gly Pro  Thr Ala Glu Asn Ala  Glu Tyr Leu Arg Val  Ala Pro Pro
    1190                1195            1200
```

```
Ser Ser  Glu Phe Ile Gly Ala
    1205                1210
```

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<210>  7
<211>  18
<212>  DNA
<213>  Mus musculus

<400>  7
gcatgtcaag atcacaga                                          18


<210>  8
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<400>  8
gcatgtcaag atcacagg                                          18


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<211>  20
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<400>  9
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tagagaatga ccctgacgag                                                    20


<210>  10
<211>  4624
<212>  DNA
<213>  Homo sapiens


<220>
<221>  CDS
<222>  (239)..(4006)

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attcccctcc attgggaccg gagaaaccag gggagccccc cgggcagccg cgcgcccctt      120

cccacggggc cctttactgc gccgcgcgcc cggcccccac ccctcgcagc accccgcgcc      180

ccgcgccctc ccagccgggt ccagccggag ccatggggcc ggagccgcag tgagcacc        238

atg gag ctg gcg gcc ttg tgc cgc tgg ggg ctc ctc ctc gcc ctc ttg        286
Met Glu Leu Ala Ala Leu Cys Arg Trp Gly Leu Leu Leu Ala Leu Leu
1               5                   10                  15

ccc ccc gga gcc gcg agc acc caa gtg tgc acc ggc aca gac atg aag        334
Pro Pro Gly Ala Ala Ser Thr Gln Val Cys Thr Gly Thr Asp Met Lys
            20                  25                  30

ctg cgg ctc cct gcc agt ccc gag acc cac ctg gac atg ctc cgc cac        382
Leu Arg Leu Pro Ala Ser Pro Glu Thr His Leu Asp Met Leu Arg His
        35                  40                  45

ctc tac cag ggc tgc cag gtg gtg cag gga aac ctg gaa ctc acc tac        430
Leu Tyr Gln Gly Cys Gln Val Val Gln Gly Asn Leu Glu Leu Thr Tyr
    50                  55                  60

ctg ccc acc aat gcc agc ctg tcc ttc ctg cag gat atc cag gag gtg        478
Leu Pro Thr Asn Ala Ser Leu Ser Phe Leu Gln Asp Ile Gln Glu Val
65                  70                  75                  80

cag ggc tac gtg ctc atc gct cac aac caa gtg agg cag gtc cca ctg        526
Gln Gly Tyr Val Leu Ile Ala His Asn Gln Val Arg Gln Val Pro Leu
                85                  90                  95

cag agg ctg cgg att gtg cga ggc acc cag ctc ttt gag gac aac tat        574
Gln Arg Leu Arg Ile Val Arg Gly Thr Gln Leu Phe Glu Asp Asn Tyr
            100                 105                 110

gcc ctg gcc gtg cta gac aat gga gac ccg ctg aac aat acc acc cct        622
Ala Leu Ala Val Leu Asp Asn Gly Asp Pro Leu Asn Asn Thr Thr Pro
        115                 120                 125

gtc aca ggg gcc tcc cca gga ggc ctg cgg gag ctg cag ctt cga agc        670
Val Thr Gly Ala Ser Pro Gly Gly Leu Arg Glu Leu Gln Leu Arg Ser
    130                 135                 140

ctc aca gag atc ttg aaa gga ggg gtc ttg atc cag cgg aac ccc cag        718
Leu Thr Glu Ile Leu Lys Gly Gly Val Leu Ile Gln Arg Asn Pro Gln
145                 150                 155                 160

ctc tgc tac cag gac acg att ttg tgg aag gac atc ttc cac aag aac        766
Leu Cys Tyr Gln Asp Thr Ile Leu Trp Lys Asp Ile Phe His Lys Asn
                165                 170                 175

aac cag ctg gct ctc aca ctg ata gac acc aac cgc tct cgg gcc tgc        814
Asn Gln Leu Ala Leu Thr Leu Ile Asp Thr Asn Arg Ser Arg Ala Cys
```

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```
                180                 185                 190

cac ccc tgt tct ccg atg tgt aag ggc tcc cgc tgc tgg gga gag agt      862
His Pro Cys Ser Pro Met Cys Lys Gly Ser Arg Cys Trp Gly Glu Ser
        195                 200                 205

tct gag gat tgt cag agc ctg acg cgc act gtc tgt gcc ggt ggc tgt      910
Ser Glu Asp Cys Gln Ser Leu Thr Arg Thr Val Cys Ala Gly Gly Cys
    210                 215                 220

gcc cgc tgc aag ggg cca ctg ccc act gac tgc tgc cat gag cag tgt      958
Ala Arg Cys Lys Gly Pro Leu Pro Thr Asp Cys Cys His Glu Gln Cys
225                 230                 235                 240

gct gcc ggc tgc acg ggc ccc aag cac tct gac tgc ctg gcc tgc ctc     1006
Ala Ala Gly Cys Thr Gly Pro Lys His Ser Asp Cys Leu Ala Cys Leu
                245                 250                 255

cac ttc aac cac agt ggc atc tgt gag ctg cac tgc cca gcc ctg gtc     1054
His Phe Asn His Ser Gly Ile Cys Glu Leu His Cys Pro Ala Leu Val
                260                 265                 270

acc tac aac aca gac acg ttt gag tcc atg ccc aat ccc gag ggc cgg     1102
Thr Tyr Asn Thr Asp Thr Phe Glu Ser Met Pro Asn Pro Glu Gly Arg
                275                 280                 285

tat aca ttc ggc gcc agc tgt gtg act gcc tgt ccc tac aac tac ctt     1150
Tyr Thr Phe Gly Ala Ser Cys Val Thr Ala Cys Pro Tyr Asn Tyr Leu
        290                 295                 300

tct acg gac gtg gga tcc tgc acc ctc gtc tgc ccc ctg cac aac caa     1198
Ser Thr Asp Val Gly Ser Cys Thr Leu Val Cys Pro Leu His Asn Gln
305                 310                 315                 320

gag gtg aca gca gag gat gga aca cag cgg tgt gag aag tgc agc aag     1246
Glu Val Thr Ala Glu Asp Gly Thr Gln Arg Cys Glu Lys Cys Ser Lys
                325                 330                 335

ccc tgt gcc cga gtg tgc tat ggt ctg ggc atg gag cac ttg cga gag     1294
Pro Cys Ala Arg Val Cys Tyr Gly Leu Gly Met Glu His Leu Arg Glu
                340                 345                 350

gtg agg gca gtt acc agt gcc aat atc cag gag ttt gct ggc tgc aag     1342
Val Arg Ala Val Thr Ser Ala Asn Ile Gln Glu Phe Ala Gly Cys Lys
                355                 360                 365

aag atc ttt ggg agc ctg gca ttt ctg ccg gag agc ttt gat ggg gac     1390
Lys Ile Phe Gly Ser Leu Ala Phe Leu Pro Glu Ser Phe Asp Gly Asp
        370                 375                 380

cca gcc tcc aac act gcc ccg ctc cag cca gag cag ctc caa gtg ttt     1438
Pro Ala Ser Asn Thr Ala Pro Leu Gln Pro Glu Gln Leu Gln Val Phe
385                 390                 395                 400

gag act ctg gaa gag atc aca ggt tac cta tac atc tca gca tgg ccg     1486
Glu Thr Leu Glu Glu Ile Thr Gly Tyr Leu Tyr Ile Ser Ala Trp Pro
                405                 410                 415

gac agc ctg cct gac ctc agc gtc ttc cag aac ctg caa gta atc cgg     1534
Asp Ser Leu Pro Asp Leu Ser Val Phe Gln Asn Leu Gln Val Ile Arg
        420                 425                 430

gga cga att ctg cac aat ggc gcc tac tcg ctg acc ctg caa ggg ctg     1582
Gly Arg Ile Leu His Asn Gly Ala Tyr Ser Leu Thr Leu Gln Gly Leu
        435                 440                 445

ggc atc agc tgg ctg ggg ctg cgc tca ctg agg gaa ctg ggc agt gga     1630
Gly Ile Ser Trp Leu Gly Leu Arg Ser Leu Arg Glu Leu Gly Ser Gly
```

```
        450                    455                    460
ctg gcc ctc atc cac cat aac acc cac ctc tgc ttc gtg cac acg gtg      1678
Leu Ala Leu Ile His His Asn Thr His Leu Cys Phe Val His Thr Val
465                     470                    475                    480

ccc tgg gac cag ctc ttt cgg aac ccg cac caa gct ctg ctc cac act      1726
Pro Trp Asp Gln Leu Phe Arg Asn Pro His Gln Ala Leu Leu His Thr
                        485                    490                    495

gcc aac cgg cca gag gac gag tgt gtg ggc gag ggc ctg gcc tgc cac      1774
Ala Asn Arg Pro Glu Asp Glu Cys Val Gly Glu Gly Leu Ala Cys His
                   500                    505                    510

cag ctg tgc gcc cga ggg cac tgc tgg ggt cca ggg ccc acc cag tgt      1822
Gln Leu Cys Ala Arg Gly His Cys Trp Gly Pro Gly Pro Thr Gln Cys
              515                    520                    525

gtc aac tgc agc cag ttc ctt cgg ggc cag gag tgc gtg gag gaa tgc      1870
Val Asn Cys Ser Gln Phe Leu Arg Gly Gln Glu Cys Val Glu Glu Cys
              530                    535                    540

cga gta ctg cag ggg ctc ccc agg gag tat gtg aat gcc agg cac tgt      1918
Arg Val Leu Gln Gly Leu Pro Arg Glu Tyr Val Asn Ala Arg His Cys
545                     550                    555                    560

ttg ccg tgc cac cct gag tgt cag ccc cag aat ggc tca gtg acc tgt      1966
Leu Pro Cys His Pro Glu Cys Gln Pro Gln Asn Gly Ser Val Thr Cys
                        565                    570                    575

ttt gga ccg gag gct gac cag tgt gtg gcc tgt gcc cac tat aag gac      2014
Phe Gly Pro Glu Ala Asp Gln Cys Val Ala Cys Ala His Tyr Lys Asp
                   580                    585                    590

cct ccc ttc tgc gtg gcc cgc tgc ccc agc ggt gtg aaa cct gac ctc      2062
Pro Pro Phe Cys Val Ala Arg Cys Pro Ser Gly Val Lys Pro Asp Leu
              595                    600                    605

tcc tac atg ccc atc tgg aag ttt cca gat gag gag ggc gca tgc cag      2110
Ser Tyr Met Pro Ile Trp Lys Phe Pro Asp Glu Glu Gly Ala Cys Gln
              610                    615                    620

cct tgc ccc atc aac tgc acc cac tcc tgt gtg gac ctg gat gac aag      2158
Pro Cys Pro Ile Asn Cys Thr His Ser Cys Val Asp Leu Asp Asp Lys
625                     630                    635                    640

ggc tgc ccc gcc gag cag aga gcc agc cct ctg acg tcc atc atc tct      2206
Gly Cys Pro Ala Glu Gln Arg Ala Ser Pro Leu Thr Ser Ile Ile Ser
                   645                    650                    655

gcg gtg gtt ggc att ctg ctg gtc gtg gtc ttg ggg gtg gtc ttt ggg      2254
Ala Val Val Gly Ile Leu Leu Val Val Val Leu Gly Val Val Phe Gly
                   660                    665                    670

atc ctc atc aag cga cgg cag cag aag atc cgg aag tac acg atg cgg      2302
Ile Leu Ile Lys Arg Arg Gln Gln Lys Ile Arg Lys Tyr Thr Met Arg
              675                    680                    685

aga ctg ctg cag gaa acg gag ctg gtg gag ccg ctg aca cct agc gga      2350
Arg Leu Leu Gln Glu Thr Glu Leu Val Glu Pro Leu Thr Pro Ser Gly
              690                    695                    700

gcg atg ccc aac cag gcg cag atg cgg atc ctg aaa gag acg gag ctg      2398
Ala Met Pro Asn Gln Ala Gln Met Arg Ile Leu Lys Glu Thr Glu Leu
705                     710                    715                    720

agg aag gtg aag gtg ctt gga tct ggc gct ttt ggc aca gtc tac aag      2446
Arg Lys Val Lys Val Leu Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys
```

```
                    725                    730                    735

ggc atc tgg atc cct gat ggg gag aat gtg aaa att cca gtg gcc atc        2494
Gly Ile Trp Ile Pro Asp Gly Glu Asn Val Lys Ile Pro Val Ala Ile
            740                    745                    750

aaa gtg ttg agg gaa aac aca tcc ccc aaa gcc aac aaa gaa atc tta        2542
Lys Val Leu Arg Glu Asn Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu
            755                    760                    765

gac gaa gca tac gtg atg gct ggt gtg ggc tcc cca tat gtc tcc cgc        2590
Asp Glu Ala Tyr Val Met Ala Gly Val Gly Ser Pro Tyr Val Ser Arg
        770                    775                    780

ctt ctg ggc atc tgc ctg aca tcc acg gtg cag ctg gtg aca cag ctt        2638
Leu Leu Gly Ile Cys Leu Thr Ser Thr Val Gln Leu Val Thr Gln Leu
785                    790                    795                    800

atg ccc tat ggc tgc ctc tta gac cat gtc cgg gaa aac cgc gga cgc        2686
Met Pro Tyr Gly Cys Leu Leu Asp His Val Arg Glu Asn Arg Gly Arg
                    805                    810                    815

ctg ggc tcc cag gac ctg ctg aac tgg tgt atg cag att gcc aag ggg        2734
Leu Gly Ser Gln Asp Leu Leu Asn Trp Cys Met Gln Ile Ala Lys Gly
                820                    825                    830

atg agc tac ctg gag gat gtg cgg ctc gta cac agg gac ttg gcc gct        2782
Met Ser Tyr Leu Glu Asp Val Arg Leu Val His Arg Asp Leu Ala Ala
            835                    840                    845

cgg aac gtg ctg gtc aag agt ccc aac cat gtc aaa att aca gac ttc        2830
Arg Asn Val Leu Val Lys Ser Pro Asn His Val Lys Ile Thr Asp Phe
        850                    855                    860

ggg ctg gct cgg ctg ctg gac att gac gag aca gag tac cat gca gat        2878
Gly Leu Ala Arg Leu Leu Asp Ile Asp Glu Thr Glu Tyr His Ala Asp
865                    870                    875                    880

ggg ggc aag gtg ccc atc aag tgg atg gcg ctg gag tcc att ctc cgc        2926
Gly Gly Lys Val Pro Ile Lys Trp Met Ala Leu Glu Ser Ile Leu Arg
                    885                    890                    895

cgg cgg ttc acc cac cag agt gat gtg tgg agt tat ggt gtg act gtg        2974
Arg Arg Phe Thr His Gln Ser Asp Val Trp Ser Tyr Gly Val Thr Val
                900                    905                    910

tgg gag ctg atg act ttt ggg gcc aaa cct tac gat ggg atc cca gcc        3022
Trp Glu Leu Met Thr Phe Gly Ala Lys Pro Tyr Asp Gly Ile Pro Ala
        915                    920                    925

cgg gag atc cct gac ctg ctg gaa aag ggg gag cgg ctg ccc cag ccc        3070
Arg Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu Arg Leu Pro Gln Pro
        930                    935                    940

ccc atc tgc acc att gat gtc tac atg atc atg gtc aaa tgt tgg atg        3118
Pro Ile Cys Thr Ile Asp Val Tyr Met Ile Met Val Lys Cys Trp Met
945                    950                    955                    960

att gac tct gaa tgt cgg cca aga ttc cgg gag ttg gtg tct gaa ttc        3166
Ile Asp Ser Glu Cys Arg Pro Arg Phe Arg Glu Leu Val Ser Glu Phe
                    965                    970                    975

tcc cgc atg gcc agg gac ccc cag cgc ttt gtg gtc atc cag aat gag        3214
Ser Arg Met Ala Arg Asp Pro Gln Arg Phe Val Val Ile Gln Asn Glu
                980                    985                    990

gac ttg ggc cca gcc agt ccc ttg gac agc acc ttc tac cgc tca ctg        3262
Asp Leu Gly Pro Ala Ser Pro Leu Asp Ser Thr Phe Tyr Arg Ser Leu
```

```
            995                  1000                  1005

ctg gag gac gat gac atg ggg gac ctg gtg gat gct gag gag tat      3307
Leu Glu Asp Asp Asp Met Gly Asp Leu Val Asp Ala Glu Glu Tyr
        1010                1015                1020

ctg gta ccc cag cag ggc ttc ttc tgt cca gac cct gcc ccg ggc      3352
Leu Val Pro Gln Gln Gly Phe Phe Cys Pro Asp Pro Ala Pro Gly
        1025                1030                1035

gct ggg ggc atg gtc cac cac agg cac cgc agc tca tct acc agg      3397
Ala Gly Gly Met Val His His Arg His Arg Ser Ser Ser Thr Arg
        1040                1045                1050

agt ggc ggt ggg gac ctg aca cta ggg ctg gag ccc tct gaa gag      3442
Ser Gly Gly Gly Asp Leu Thr Leu Gly Leu Glu Pro Ser Glu Glu
        1055                1060                1065

gag gcc ccc agg tct cca ctg gca ccc tcc gaa ggg gct ggc tcc      3487
Glu Ala Pro Arg Ser Pro Leu Ala Pro Ser Glu Gly Ala Gly Ser
        1070                1075                1080

gat gta ttt gat ggt gac ctg gga atg ggg gca gcc aag ggg ctg      3532
Asp Val Phe Asp Gly Asp Leu Gly Met Gly Ala Ala Lys Gly Leu
        1085                1090                1095

caa agc ctc ccc aca cat gac ccc agc cct cta cag cgg tac agt      3577
Gln Ser Leu Pro Thr His Asp Pro Ser Pro Leu Gln Arg Tyr Ser
        1100                1105                1110

gag gac ccc aca gta ccc ctg ccc tct gag act gat ggc tac gtt      3622
Glu Asp Pro Thr Val Pro Leu Pro Ser Glu Thr Asp Gly Tyr Val
        1115                1120                1125

gcc ccc ctg acc tgc agc ccc cag cct gaa tat gtg aac cag cca      3667
Ala Pro Leu Thr Cys Ser Pro Gln Pro Glu Tyr Val Asn Gln Pro
        1130                1135                1140

gat gtt cgg ccc cag ccc cct tcg ccc cga gag ggc cct ctg cct      3712
Asp Val Arg Pro Gln Pro Pro Ser Pro Arg Glu Gly Pro Leu Pro
        1145                1150                1155

gct gcc cga cct gct ggt gcc act ctg gaa agg ccc aag act ctc      3757
Ala Ala Arg Pro Ala Gly Ala Thr Leu Glu Arg Pro Lys Thr Leu
        1160                1165                1170

tcc cca ggg aag aat ggg gtc gtc aaa gac gtt ttt gcc ttt ggg      3802
Ser Pro Gly Lys Asn Gly Val Val Lys Asp Val Phe Ala Phe Gly
        1175                1180                1185

ggt gcc gtg gag aac ccc gag tac ttg aca ccc cag gga gga gct      3847
Gly Ala Val Glu Asn Pro Glu Tyr Leu Thr Pro Gln Gly Gly Ala
        1190                1195                1200

gcc cct cag ccc cac cct cct cct gcc ttc agc cca gcc ttc gac      3892
Ala Pro Gln Pro His Pro Pro Pro Ala Phe Ser Pro Ala Phe Asp
        1205                1210                1215

aac ctc tat tac tgg gac cag gac cca cca gag cgg ggg gct cca      3937
Asn Leu Tyr Tyr Trp Asp Gln Asp Pro Pro Glu Arg Gly Ala Pro
        1220                1225                1230

ccc agc acc ttc aaa ggg aca cct acg gca gag aac cca gag tac      3982
Pro Ser Thr Phe Lys Gly Thr Pro Thr Ala Glu Asn Pro Glu Tyr
        1235                1240                1245

ctg ggt ctg gac gtg cca gtg tga accagaaggc caagtccgca            4026
Leu Gly Leu Asp Val Pro Val
```

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        1250                    1255
gaagccctga tgtgtcctca gggagcaggg aaggcctgac ttctgctggc atcaagaggt   4086

gggagggccc tccgaccact tccaggggaa cctgccatgc caggaacctg tcctaaggaa   4146

ccttccttcc tgcttgagtt cccagatggc tggaaggggt ccagcctcgt tggaagagga   4206

acagcactgg ggagtctttg tggattctga ggccctgccc aatgagactc tagggtccag   4266

tggatgccac agcccagctt ggccctttcc ttccagatcc tgggtactga aagccttagg   4326

gaagctggcc tgagagggga agcggcccta agggagtgtc taagaacaaa agcgacccat   4386

tcagagactg tccctgaaac ctagtactgc cccccatgag gaaggaacag caatggtgtc   4446

agtatccagg ctttgtacag agtgcttttc tgtttagttt ttacttttt tgttttgttt     4506

ttttaaagat gaaataaaga cccaggggga gaatgggtgt tgtatgggga ggcaagtgtg   4566

gggggtcctt ctccacaccc actttgtcca tttgcaaata tattttggaa aacagcta     4624
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<210> 11
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<212> PRT
<213> Homo sapiens

<400> 11

Met Glu Leu Ala Ala Leu Cys Arg Trp Gly Leu Leu Leu Ala Leu Leu
1   5   10   15

Pro Pro Gly Ala Ala Ser Thr Gln Val Cys Thr Gly Thr Asp Met Lys
            20   25   30

Leu Arg Leu Pro Ala Ser Pro Glu Thr His Leu Asp Met Leu Arg His
        35   40   45

Leu Tyr Gln Gly Cys Gln Val Val Gln Gly Asn Leu Glu Leu Thr Tyr
    50   55   60

Leu Pro Thr Asn Ala Ser Leu Ser Phe Leu Gln Asp Ile Gln Glu Val
65   70   75   80

Gln Gly Tyr Val Leu Ile Ala His Asn Gln Val Arg Gln Val Pro Leu
                85   90   95

Gln Arg Leu Arg Ile Val Arg Gly Thr Gln Leu Phe Glu Asp Asn Tyr
            100   105   110

Ala Leu Ala Val Leu Asp Asn Gly Asp Pro Leu Asn Asn Thr Thr Pro
        115   120   125

Val Thr Gly Ala Ser Pro Gly Gly Leu Arg Glu Leu Gln Leu Arg Ser
        130   135   140

Leu Thr Glu Ile Leu Lys Gly Gly Val Leu Ile Gln Arg Asn Pro Gln
                              - 38 -
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145                    150                    155                    160

Leu Cys Tyr Gln Asp Thr Ile Leu Trp Lys Asp Ile Phe His Lys Asn
              165                   170                   175

Asn Gln Leu Ala Leu Thr Leu Ile Asp Thr Asn Arg Ser Arg Ala Cys
          180                   185                   190

His Pro Cys Ser Pro Met Cys Lys Gly Ser Arg Cys Trp Gly Glu Ser
          195                   200                   205

Ser Glu Asp Cys Gln Ser Leu Thr Arg Thr Val Cys Ala Gly Gly Cys
      210                   215                   220

Ala Arg Cys Lys Gly Pro Leu Pro Thr Asp Cys Cys His Glu Gln Cys
225                   230                   235                   240

Ala Ala Gly Cys Thr Gly Pro Lys His Ser Asp Cys Leu Ala Cys Leu
              245                   250                   255

His Phe Asn His Ser Gly Ile Cys Glu Leu His Cys Pro Ala Leu Val
          260                   265                   270

Thr Tyr Asn Thr Asp Thr Phe Glu Ser Met Pro Asn Pro Glu Gly Arg
          275                   280                   285

Tyr Thr Phe Gly Ala Ser Cys Val Thr Ala Cys Pro Tyr Asn Tyr Leu
      290                   295                   300

Ser Thr Asp Val Gly Ser Cys Thr Leu Val Cys Pro Leu His Asn Gln
305                   310                   315                   320

Glu Val Thr Ala Glu Asp Gly Thr Gln Arg Cys Glu Lys Cys Ser Lys
              325                   330                   335

Pro Cys Ala Arg Val Cys Tyr Gly Leu Gly Met Glu His Leu Arg Glu
          340                   345                   350

Val Arg Ala Val Thr Ser Ala Asn Ile Gln Glu Phe Ala Gly Cys Lys
          355                   360                   365

Lys Ile Phe Gly Ser Leu Ala Phe Leu Pro Glu Ser Phe Asp Gly Asp
      370                   375                   380

Pro Ala Ser Asn Thr Ala Pro Leu Gln Pro Glu Gln Leu Gln Val Phe
385                   390                   395                   400

Glu Thr Leu Glu Glu Ile Thr Gly Tyr Leu Tyr Ile Ser Ala Trp Pro
              405                   410                   415

Asp Ser Leu Pro Asp Leu Ser Val Phe Gln Asn Leu Gln Val Ile Arg
- 39 -

                    420                    425                    430

Gly Arg Ile Leu His Asn Gly Ala Tyr Ser Leu Thr Leu Gln Gly Leu
        435                440                445

Gly Ile Ser Trp Leu Gly Leu Arg Ser Leu Arg Glu Leu Gly Ser Gly
    450                455                460

Leu Ala Leu Ile His His Asn Thr His Leu Cys Phe Val His Thr Val
465                470                475                480

Pro Trp Asp Gln Leu Phe Arg Asn Pro His Gln Ala Leu Leu His Thr
            485                490                495

Ala Asn Arg Pro Glu Asp Glu Cys Val Gly Glu Gly Leu Ala Cys His
            500                505                510

Gln Leu Cys Ala Arg Gly His Cys Trp Gly Pro Gly Pro Thr Gln Cys
        515                520                525

Val Asn Cys Ser Gln Phe Leu Arg Gly Gln Glu Cys Val Glu Glu Cys
    530                535                540

Arg Val Leu Gln Gly Leu Pro Arg Glu Tyr Val Asn Ala Arg His Cys
545                550                555                560

Leu Pro Cys His Pro Glu Cys Gln Pro Gln Asn Gly Ser Val Thr Cys
            565                570                575

Phe Gly Pro Glu Ala Asp Gln Cys Val Ala Cys Ala His Tyr Lys Asp
        580                585                590

Pro Pro Phe Cys Val Ala Arg Cys Pro Ser Gly Val Lys Pro Asp Leu
        595                600                605

Ser Tyr Met Pro Ile Trp Lys Phe Pro Asp Glu Glu Gly Ala Cys Gln
    610                615                620

Pro Cys Pro Ile Asn Cys Thr His Ser Cys Val Asp Leu Asp Asp Lys
625                630                635                640

Gly Cys Pro Ala Glu Gln Arg Ala Ser Pro Leu Thr Ser Ile Ile Ser
            645                650                655

Ala Val Val Gly Ile Leu Leu Val Val Val Leu Gly Val Val Phe Gly
            660                665                670

Ile Leu Ile Lys Arg Arg Gln Gln Lys Ile Arg Lys Tyr Thr Met Arg
        675                680                685

Arg Leu Leu Gln Glu Thr Glu Leu Val Glu Pro Leu Thr Pro Ser Gly
                            - 40 -

         690                          695                     700

Ala Met Pro Asn Gln Ala Gln Met Arg Ile Leu Lys Glu Thr Glu Leu
705                     710                  715                  720


Arg Lys Val Lys Val Leu Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys
               725                  730                  735


Gly Ile Trp Ile Pro Asp Gly Glu Asn Val Lys Ile Pro Val Ala Ile
          740                  745                  750


Lys Val Leu Arg Glu Asn Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu
          755                  760                  765


Asp Glu Ala Tyr Val Met Ala Gly Val Gly Ser Pro Tyr Val Ser Arg
     770                  775                  780


Leu Leu Gly Ile Cys Leu Thr Ser Thr Val Gln Leu Val Thr Gln Leu
785                  790                  795                  800


Met Pro Tyr Gly Cys Leu Leu Asp His Val Arg Glu Asn Arg Gly Arg
               805                  810                  815


Leu Gly Ser Gln Asp Leu Leu Asn Trp Cys Met Gln Ile Ala Lys Gly
          820                  825                  830


Met Ser Tyr Leu Glu Asp Val Arg Leu Val His Arg Asp Leu Ala Ala
          835                  840                  845


Arg Asn Val Leu Val Lys Ser Pro Asn His Val Lys Ile Thr Asp Phe
     850                  855                  860


Gly Leu Ala Arg Leu Leu Asp Ile Asp Glu Thr Glu Tyr His Ala Asp
865                  870                  875                  880


Gly Gly Lys Val Pro Ile Lys Trp Met Ala Leu Glu Ser Ile Leu Arg
               885                  890                  895


Arg Arg Phe Thr His Gln Ser Asp Val Trp Ser Tyr Gly Val Thr Val
          900                  905                  910


Trp Glu Leu Met Thr Phe Gly Ala Lys Pro Tyr Asp Gly Ile Pro Ala
     915                  920                  925


Arg Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu Arg Leu Pro Gln Pro
     930                  935                  940


Pro Ile Cys Thr Ile Asp Val Tyr Met Ile Met Val Lys Cys Trp Met
945                  950                  955                  960


Ile Asp Ser Glu Cys Arg Pro Arg Phe Arg Glu Leu Val Ser Glu Phe
                                    - 41 -

                    965                          970                          975

Ser Arg Met Ala Arg Asp Pro Gln Arg Phe Val Val Ile Gln Asn Glu
            980                          985                          990

Asp Leu Gly Pro Ala Ser Pro Leu  Asp Ser Thr Phe Tyr  Arg Ser Leu
        995                  1000                      1005

Leu Glu  Asp Asp Asp Met Gly  Asp Leu Val Asp Ala  Glu Glu Tyr
    1010                  1015                  1020

Leu Val  Pro Gln Gln Gly Phe  Phe Cys Pro Asp Pro  Ala Pro Gly
    1025                  1030                  1035

Ala Gly  Gly Met Val His His  Arg His Arg Ser Ser  Ser Thr Arg
    1040                  1045                  1050

Ser Gly  Gly Gly Asp Leu Thr  Leu Gly Leu Glu Pro  Ser Glu Glu
    1055                  1060                  1065

Glu Ala  Pro Arg Ser Pro Leu  Ala Pro Ser Glu Gly  Ala Gly Ser
    1070                  1075                  1080

Asp Val  Phe Asp Gly Asp Leu  Gly Met Gly Ala Ala  Lys Gly Leu
    1085                  1090                  1095

Gln Ser  Leu Pro Thr His Asp  Pro Ser Pro Leu Gln  Arg Tyr Ser
    1100                  1105                  1110

Glu Asp  Pro Thr Val Pro Leu  Pro Ser Glu Thr Asp  Gly Tyr Val
    1115                  1120                  1125

Ala Pro  Leu Thr Cys Ser Pro  Gln Pro Glu Tyr Val  Asn Gln Pro
    1130                  1135                  1140

Asp Val  Arg Pro Gln Pro Pro  Ser Pro Arg Glu Gly  Pro Leu Pro
    1145                  1150                  1155

Ala Ala  Arg Pro Ala Gly Ala  Thr Leu Glu Arg Pro  Lys Thr Leu
    1160                  1165                  1170

Ser Pro  Gly Lys Asn Gly Val  Val Lys Asp Val Phe  Ala Phe Gly
    1175                  1180                  1185

Gly Ala  Val Glu Asn Pro Glu  Tyr Leu Thr Pro Gln  Gly Gly Ala
    1190                  1195                  1200

Ala Pro  Gln Pro His Pro Pro  Pro Ala Phe Ser Pro  Ala Phe Asp
    1205                  1210                  1215

Asn Leu  Tyr Tyr Trp Asp Gln  Asp Pro Pro Glu Arg  Gly Ala Pro

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        1220              1225                    1230


   Pro Ser  Thr Phe Lys Gly Thr  Pro Thr Ala Glu Asn  Pro Glu Tyr
        1235              1240                    1245


   Leu Gly  Leu Asp Val Pro Val
        1250              1255
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<212>  DNA
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caggagcgcc ccttcccagg cggcccctтc cggcgccgcg cctgtgcctg ccctcgccgc   120

gccccgcgcc cgcagcctgg tccagcctga gccatggggc cggagccgca gtgatcatc   179

atg gag ctg gcg gcc tgg tgc cgt tgg ggg ttc ctc ctc gcc ctc ctg   227
Met Glu Leu Ala Ala Trp Cys Arg Trp Gly Phe Leu Leu Ala Leu Leu
1               5                   10                  15

tcc ccc gga gcc gcg ggt acc caa gtg tgt acc ggt acc gac atg aag   275
Ser Pro Gly Ala Ala Gly Thr Gln Val Cys Thr Gly Thr Asp Met Lys
                20                  25                  30

ttg cga ctc cct gcc agt cct gag acc cac ctg gac atg ctt cgc cac   323
Leu Arg Leu Pro Ala Ser Pro Glu Thr His Leu Asp Met Leu Arg His
            35                  40                  45

ctc tac cag ggc tgt cag gtg gtg cag ggc aat ttg gag ctt acc tac   371
Leu Tyr Gln Gly Cys Gln Val Val Gln Gly Asn Leu Glu Leu Thr Tyr
        50                  55                  60

ctg ccc gcc aat gcc agc ctc tca ttc ctg cag gac atc cag gaa gtc   419
Leu Pro Ala Asn Ala Ser Leu Ser Phe Leu Gln Asp Ile Gln Glu Val
65                  70                  75                  80

cag gga tac atg ctc atc gct cac aac cga gtg aaa cac gtc cca ctg   467
Gln Gly Tyr Met Leu Ile Ala His Asn Arg Val Lys His Val Pro Leu
                85                  90                  95

cag agg ttg cgc atc gtg aga ggg act cag ctc ttt gag gac aag tat   515
Gln Arg Leu Arg Ile Val Arg Gly Thr Gln Leu Phe Glu Asp Lys Tyr
            100                 105                 110

gcc ctg gct gtg cta gac aac cga gac cct ttg gac aac gtc acc acc   563
Ala Leu Ala Val Leu Asp Asn Arg Asp Pro Leu Asp Asn Val Thr Thr
            115                 120                 125

gcc gcc cca ggc aga acc cca gaa ggg ctg cgg gag ctg cag ctt cga   611
Ala Ala Pro Gly Arg Thr Pro Glu Gly Leu Arg Glu Leu Gln Leu Arg
        130                 135                 140

agt ctc aca gag atc ttg aag gga gga gtt ttg atc cgt ggg aac cct   659
Ser Leu Thr Glu Ile Leu Lys Gly Gly Val Leu Ile Arg Gly Asn Pro
145                 150                 155                 160
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cag ctc tgc tac cag gac atg gtt ttg tgg aag gat gtc ctc cgt aag    707
Gln Leu Cys Tyr Gln Asp Met Val Leu Trp Lys Asp Val Leu Arg Lys
             165                 170                 175

aat aac cag ctg gct cct gtc gac atg gac acc aat cgt tcc cgg gcc    755
Asn Asn Gln Leu Ala Pro Val Asp Met Asp Thr Asn Arg Ser Arg Ala
             180                 185                 190

tgt cca cct tgt gcc cca acc tgc aaa gac aat cac tgt tgg ggt gag    803
Cys Pro Pro Cys Ala Pro Thr Cys Lys Asp Asn His Cys Trp Gly Glu
             195                 200                 205

agt cct gaa gac tgt cag atc ttg act ggc acc atc tgt act agt ggc    851
Ser Pro Glu Asp Cys Gln Ile Leu Thr Gly Thr Ile Cys Thr Ser Gly
     210                 215                 220

tgt gcc cgg tgc aag ggc cgg ctg ccc act gac tgt tgc cat gag cag    899
Cys Ala Arg Cys Lys Gly Arg Leu Pro Thr Asp Cys Cys His Glu Gln
225                 230                 235                 240

tgt gct gca ggc tgc acg ggt ccc aag cat tct gac tgc ctg gcc tgc    947
Cys Ala Ala Gly Cys Thr Gly Pro Lys His Ser Asp Cys Leu Ala Cys
             245                 250                 255

ctc cac ttc aat cat agt ggt atc tgt gag ctg cac tgc ccg gcc ctc    995
Leu His Phe Asn His Ser Gly Ile Cys Glu Leu His Cys Pro Ala Leu
             260                 265                 270

atc acc tac aac aca gac acc ttc gag tcc atg ctc aac cct gag ggt   1043
Ile Thr Tyr Asn Thr Asp Thr Phe Glu Ser Met Leu Asn Pro Glu Gly
             275                 280                 285

cgc tac acc ttt ggt gcc agc tgt gtg acc acc tgc ccc tac aac tac   1091
Arg Tyr Thr Phe Gly Ala Ser Cys Val Thr Thr Cys Pro Tyr Asn Tyr
             290                 295                 300

ctc tcc acg gaa gtg gga tcc tgc act ctg gtc tgt ccc ccg aac aac   1139
Leu Ser Thr Glu Val Gly Ser Cys Thr Leu Val Cys Pro Pro Asn Asn
305                 310                 315                 320

caa gag gtc aca gct gag gac gga aca cag cgg tgt gag aaa tgc agc   1187
Gln Glu Val Thr Ala Glu Asp Gly Thr Gln Arg Cys Glu Lys Cys Ser
             325                 330                 335

aag ccc tgt gct gga gta tgc tat ggt ctg ggc atg gag cac ctc cga   1235
Lys Pro Cys Ala Gly Val Cys Tyr Gly Leu Gly Met Glu His Leu Arg
             340                 345                 350

ggg gcg agg gcc atc acc agt gac aat atc cag gag ttt gct ggc tgc   1283
Gly Ala Arg Ala Ile Thr Ser Asp Asn Ile Gln Glu Phe Ala Gly Cys
             355                 360                 365

aag aag atc ttt ggg agc ctg gca ttt ttg ccg gag agc ttt gat ggg   1331
Lys Lys Ile Phe Gly Ser Leu Ala Phe Leu Pro Glu Ser Phe Asp Gly
             370                 375                 380

aac ccc tcc tcc ggc gtt gcc cca ctg aag cca gag cat ctc caa gtg   1379
Asn Pro Ser Ser Gly Val Ala Pro Leu Lys Pro Glu His Leu Gln Val
385                 390                 395                 400

ttc gaa acc ctg gag gag atc aca ggt tac cta tac att tca gca tgg   1427
Phe Glu Thr Leu Glu Glu Ile Thr Gly Tyr Leu Tyr Ile Ser Ala Trp
             405                 410                 415

cca gag agc ttc caa gac ctc agt gtc ttc cag aac ctt cgg gtc att   1475
Pro Glu Ser Phe Gln Asp Leu Ser Val Phe Gln Asn Leu Arg Val Ile
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                  420                    425                    430

cgg gga cgg att ctc cat gat ggt gct tac tca ttg acg ttg caa ggc    1523
Arg Gly Arg Ile Leu His Asp Gly Ala Tyr Ser Leu Thr Leu Gln Gly
        435                    440                    445


ctg ggg att cac tca ctg ggg cta cgc tca ctg cgg gag ctg ggc agt    1571
Leu Gly Ile His Ser Leu Gly Leu Arg Ser Leu Arg Glu Leu Gly Ser
    450                    455                    460


gga ttg gct ctc att cac cgc aac acc cat ctc tgc ttt gta aac act    1619
Gly Leu Ala Leu Ile His Arg Asn Thr His Leu Cys Phe Val Asn Thr
465                    470                    475                    480

gta cct tgg gac cag ctc ttc cgg aac ccg cac cag gcc cta ctc cac    1667
Val Pro Trp Asp Gln Leu Phe Arg Asn Pro His Gln Ala Leu Leu His
                485                    490                    495


agt ggg aac cgg cca gaa gag gca tgt ggt ctt gag ggc ttg gtc tgt    1715
Ser Gly Asn Arg Pro Glu Glu Ala Cys Gly Leu Glu Gly Leu Val Cys
                500                    505                    510


aac tca ctg tgt gcc cgt ggg cac tgc tgg ggg cca ggg ccc acc cag    1763
Asn Ser Leu Cys Ala Arg Gly His Cys Trp Gly Pro Gly Pro Thr Gln
        515                    520                    525


tgt gtc aac tgc agt cag ttc ctc cgg ggc cag gag tgt gtg gag gag    1811
Cys Val Asn Cys Ser Gln Phe Leu Arg Gly Gln Glu Cys Val Glu Glu
        530                    535                    540


tgc cga gta tgg aag ggg ctc ccc agg gag tat gtg agg ggc aag cac    1859
Cys Arg Val Trp Lys Gly Leu Pro Arg Glu Tyr Val Arg Gly Lys His
545                    550                    555                    560


tgt ctg cca tgc cac ccc gag tgt cag cct caa aac agc tcg gag acc    1907
Cys Leu Pro Cys His Pro Glu Cys Gln Pro Gln Asn Ser Ser Glu Thr
                565                    570                    575


tgc tat gga tcg gag gct gac cag tgt gag gct tgt gcc cac tac aag    1955
Cys Tyr Gly Ser Glu Ala Asp Gln Cys Glu Ala Cys Ala His Tyr Lys
                580                    585                    590


gac tca tct tcc tgt gtg gct cgc tgc ccc agt ggt gtg aag cca gac    2003
Asp Ser Ser Ser Cys Val Ala Arg Cys Pro Ser Gly Val Lys Pro Asp
        595                    600                    605


ctc tcc tac atg cct atc tgg aag tac ccg gat gag gag ggc ata tgt    2051
Leu Ser Tyr Met Pro Ile Trp Lys Tyr Pro Asp Glu Glu Gly Ile Cys
        610                    615                    620


cag cca tgc ccc atc aac tgc acc cac tca tgt gtg gac ctg gac gaa    2099
Gln Pro Cys Pro Ile Asn Cys Thr His Ser Cys Val Asp Leu Asp Glu
625                    630                    635                    640


cga ggc tgc cca gca gag cag aga gcc agc cca gtg aca ttc atc att    2147
Arg Gly Cys Pro Ala Glu Gln Arg Ala Ser Pro Val Thr Phe Ile Ile
                645                    650                    655


gca act gtg gtg ggc gtc ctg ttg ttc ctg atc ata gtg gtg gtc att    2195
Ala Thr Val Val Gly Val Leu Leu Phe Leu Ile Ile Val Val Val Ile
                660                    665                    670


gga atc cta atc aaa cga agg cga cag aag atc cgg aag tat acc atg    2243
Gly Ile Leu Ile Lys Arg Arg Arg Gln Lys Ile Arg Lys Tyr Thr Met
                675                    680                    685


cgt agg ctg ctg cag gag acc gag ctg gtg gag ccg ctg acg ccc agt    2291
Arg Arg Leu Leu Gln Glu Thr Glu Leu Val Glu Pro Leu Thr Pro Ser
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          690                    695                   700

gga gct gtg ccc aac cag gct cag atg cgg atc cta aag gag aca gag    2339
Gly Ala Val Pro Asn Gln Ala Gln Met Arg Ile Leu Lys Glu Thr Glu
705                     710                 715                720

cta agg aag ctg aag gtg ctt ggg tca gga gcc ttc ggc act gtc tac    2387
Leu Arg Lys Leu Lys Val Leu Gly Ser Gly Ala Phe Gly Thr Val Tyr
                    725                 730                 735

aag ggc atc tgg atc cca gat ggg gag aac gtg aaa atc ccc gtg gcc    2435
Lys Gly Ile Trp Ile Pro Asp Gly Glu Asn Val Lys Ile Pro Val Ala
                740                 745                 750

atc aag gtg ttg agg gaa aac aca tct cct aaa gct aac aaa gaa atc    2483
Ile Lys Val Leu Arg Glu Asn Thr Ser Pro Lys Ala Asn Lys Glu Ile
            755                 760                 765

cta gat gaa gcg tac gtc atg gct ggt gtg ggt tct cca tat gtg tcc    2531
Leu Asp Glu Ala Tyr Val Met Ala Gly Val Gly Ser Pro Tyr Val Ser
        770                 775                 780

cgc ctc ctg ggc atc tgc ctg aca tcc aca gtg cag ctg gtg aca cag    2579
Arg Leu Leu Gly Ile Cys Leu Thr Ser Thr Val Gln Leu Val Thr Gln
785                 790                 795                 800

ctt atg ccc tat ggc tgc ctt ctg gac cat gtc cga gaa cac cga ggt    2627
Leu Met Pro Tyr Gly Cys Leu Leu Asp His Val Arg Glu His Arg Gly
                    805                 810                 815

cgc tta ggc tcc cag gac ctg ctc aac tgg tgt gtt cag att gcc aag    2675
Arg Leu Gly Ser Gln Asp Leu Leu Asn Trp Cys Val Gln Ile Ala Lys
                820                 825                 830

ggg atg agc tac ctg gag gaa gtt cgg ctt gtt cac agg gac cta gct    2723
Gly Met Ser Tyr Leu Glu Glu Val Arg Leu Val His Arg Asp Leu Ala
            835                 840                 845

gcc cga aac gtg cta gtc aag agt ccc aac cac gtc aag att acc gac    2771
Ala Arg Asn Val Leu Val Lys Ser Pro Asn His Val Lys Ile Thr Asp
        850                 855                 860

ttc ggg ctg gca cgg ctg ctg gac att gat gag act gaa tac cat gca    2819
Phe Gly Leu Ala Arg Leu Leu Asp Ile Asp Glu Thr Glu Tyr His Ala
865                 870                 875                 880

gat ggg ggc aag gtg ccc atc aag tgg atg gca ttg gaa tct att ctc    2867
Asp Gly Gly Lys Val Pro Ile Lys Trp Met Ala Leu Glu Ser Ile Leu
                    885                 890                 895

aga cgc cgg ttc acc cat cag agt gat gtg tgg agc tat ggt gtg act    2915
Arg Arg Arg Phe Thr His Gln Ser Asp Val Trp Ser Tyr Gly Val Thr
                    900                 905                 910

gtg tgg gag ctg atg acc ttt ggg gcc aaa cct tac gat ggg atc cca    2963
Val Trp Glu Leu Met Thr Phe Gly Ala Lys Pro Tyr Asp Gly Ile Pro
            915                 920                 925

gct cgg gag atc cct gat ttg ctg gag aag gga gaa cgc cta cct cag    3011
Ala Arg Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu Arg Leu Pro Gln
        930                 935                 940

cct cca atc tgc acc atc gac gtc tac atg atc atg gtc aaa tgt tgg    3059
Pro Pro Ile Cys Thr Ile Asp Val Tyr Met Ile Met Val Lys Cys Trp
945                 950                 955                 960

atg att gac tcc gaa tgt cgc ccg aga ttc cgg gag ttg gta tca gaa    3107
Met Ile Asp Ser Glu Cys Arg Pro Arg Phe Arg Glu Leu Val Ser Glu
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                    965                  970                  975
ttc tcc cgt atg gca agg gac ccc cag cgc ttt gtg gtc atc cag aac    3155
Phe Ser Arg Met Ala Arg Asp Pro Gln Arg Phe Val Val Ile Gln Asn
            980                      985                  990
gag gac tta ggc ccc tcc agc ccc  atg gac agc acc ttc  tac cgt tca    3203
Glu Asp Leu Gly Pro Ser Ser Pro  Met Asp Ser Thr Phe  Tyr Arg Ser
        995                      1000                  1005

ctg ctg  gag gat gat gac atg  ggg gag ctg gtc gat  gct gaa gag    3248
Leu Leu  Glu Asp Asp Asp Met  Gly Glu Leu Val Asp  Ala Glu Glu
    1010                1015                  1020

tac ctg  gta ccc cag cag gga  ttc ttc tcc cca gac  cct gcc cta    3293
Tyr Leu  Val Pro Gln Gln Gly  Phe Phe Ser Pro Asp  Pro Ala Leu
    1025                1030                  1035

ggt act  ggg agc aca gcc cac  cgc aga cac cgc agc  tcg tcg gcc    3338
Gly Thr  Gly Ser Thr Ala His  Arg Arg His Arg Ser  Ser Ser Ala
    1040                1045                  1050

agg agt  ggc ggt ggt gag ctg  aca ctg ggc ctg gag  ccc tcg gaa    3383
Arg Ser  Gly Gly Gly Glu Leu  Thr Leu Gly Leu Glu  Pro Ser Glu
    1055                1060                  1065

gaa gag  ccc ccc aga tct cca  ctg gct ccc tcc gaa  ggg gct ggc    3428
Glu Glu  Pro Pro Arg Ser Pro  Leu Ala Pro Ser Glu  Gly Ala Gly
    1070                1075                  1080

tcc gat  gtg ttt gat ggt gac  ctg gca gtg ggg gta  acc aaa gga    3473
Ser Asp  Val Phe Asp Gly Asp  Leu Ala Val Gly Val  Thr Lys Gly
    1085                1090                  1095

ctg cag  agc ctc tct cca cat  gac ctc agc cct cta  cag cgg tac    3518
Leu Gln  Ser Leu Ser Pro His  Asp Leu Ser Pro Leu  Gln Arg Tyr
    1100                1105                  1110

agt gag  gat ccc aca tta cct  ctg ccc ccc gag act  gat ggc tac    3563
Ser Glu  Asp Pro Thr Leu Pro  Leu Pro Pro Glu Thr  Asp Gly Tyr
    1115                1120                  1125

gtt gct  ccc ctg gcc tgc agc  ccc cag ccc gag tat  gtg aac cag    3608
Val Ala  Pro Leu Ala Cys Ser  Pro Gln Pro Glu Tyr  Val Asn Gln
    1130                1135                  1140

cca gag  gtt cgg cct cag tct  ccc ttg acc cca gag  ggt cct ccg    3653
Pro Glu  Val Arg Pro Gln Ser  Pro Leu Thr Pro Glu  Gly Pro Pro
    1145                1150                  1155

cct ccc  atc cga cct gct ggt  gct act cta gaa aga  ccc aag act    3698
Pro Pro  Ile Arg Pro Ala Gly  Ala Thr Leu Glu Arg  Pro Lys Thr
    1160                1165                  1170

ctc tct  cct ggg aaa aat ggg  gtt gtc aaa gac gtt  ttt gcc ttt    3743
Leu Ser  Pro Gly Lys Asn Gly  Val Val Lys Asp Val  Phe Ala Phe
    1175                1180                  1185

ggg ggt  gct gtg gag aac cct  gaa tac tta gca ccc  aga gca ggc    3788
Gly Gly  Ala Val Glu Asn Pro  Glu Tyr Leu Ala Pro  Arg Ala Gly
    1190                1195                  1200

act gcc  tct cag ccc cac cct  tct cct gcc ttc agc  cca gcc ttt    3833
Thr Ala  Ser Gln Pro His Pro  Ser Pro Ala Phe Ser  Pro Ala Phe
    1205                1210                  1215

gac aac  ctc tat tac tgg gac  cag aac tca tcg gag  cag ggt cct    3878
Asp Asn  Leu Tyr Tyr Trp Asp  Gln Asn Ser Ser Glu  Gln Gly Pro
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        1220                    1225                    1230
cca cca  agt acc ttt gaa ggg   acc ccc act gca gag   aac cct gag      3923
Pro Pro  Ser Thr Phe Glu Gly   Thr Pro Thr Ala Glu   Asn Pro Glu
        1235                    1240                    1245

tac cta  ggc ctg gat gtg cca  gta tga ggtcacatgt gcagacatcc          3970
Tyr Leu  Gly Leu Asp Val Pro  Val
        1250                    1255


tctgtcttca gagtgggggaa ggaaggccta acttgtggtc tccatcgccc gccacaaagc   4030

agggagaagg tcctctggcc acatgacatc cagggcagcc ggctatgcca ggaacgtgcc    4090

ctgaggaacc tcgctcgatg cttcaatcct gagtggttaa gagggccccg cctggccgga    4150

agagacagca cactgttcag ccccagagga ttacagaccc tgactgccct gacagactgt    4210

agggtccagt gggtattcct tacctggcct ggctctcttg gttctgaaga ctgagggaag    4270

ctcagcctgc aagggaggag gccccaggtg aatatcctgg gagcaggaca ccccactagg    4330

actgaggcac gtgcatccca agaggggggac agcacttgca cccagactgg tctttgtaca   4390

gagtttattt tgttctgttt ttactttttgt tttttgtttt tttttaaag atgaaataag    4450

gatacagtgg gagagtgggt gttatatgaa agtcggggggg tgctgtcccc tttctccatt   4510

tgcaatgaga tttgtaaaat aactggaccc cagcctatgt ctgagagtgg tcccgggccg    4570

ggtcaaaccg tattgctcat ctgacacaca gctcctcctg gagtgagtgt gtagagatct    4630

tccaaaagtt tgagacaatt tggctttggg cttgagggac tggggagtta ggattccttc    4690

tgaaggccct ttggcaacag ggtcattctc cgttggacac actcatacca aggctacccc    4750

cagaatactc cgttggacac actcattcca aggctacccc cagaatgaag tcctgtcctc    4810

ccagtgggag aggggagctt gtggagagca ttgccatgtg acttgtttttc cttgccttag    4870

aaagaagtat ccatccagga aaaccccacc cactaggtgt tagtcccacc cactaggtgt    4930

tagcagggcc agactgacct gtgtgcccccc cgcacaggct ggacataaac acacgccagt   4990

                                                                     4998
tgacacaa
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Met Glu Leu Ala Ala Trp Cys Arg Trp Gly Phe Leu Leu Ala Leu Leu
1               5                   10                  15


Ser Pro Gly Ala Ala Gly Thr Gln Val Cys Thr Gly Thr Asp Met Lys
            20                  25                  30


Leu Arg Leu Pro Ala Ser Pro Glu Thr His Leu Asp Met Leu Arg His
            35                  40                  45


Leu Tyr Gln Gly Cys Gln Val Val Gln Gly Asn Leu Glu Leu Thr Tyr
        50                  55                  60
```

```
Leu Pro Ala Asn Ala Ser Leu Ser Phe Leu Gln Asp Ile Gln Glu Val
65                  70              75                      80


Gln Gly Tyr Met Leu Ile Ala His Asn Arg Val Lys His Val Pro Leu
                85              90                  95


Gln Arg Leu Arg Ile Val Arg Gly Thr Gln Leu Phe Glu Asp Lys Tyr
            100             105             110


Ala Leu Ala Val Leu Asp Asn Arg Asp Pro Leu Asp Asn Val Thr Thr
        115             120             125


Ala Ala Pro Gly Arg Thr Pro Glu Gly Leu Arg Glu Leu Gln Leu Arg
    130             135             140


Ser Leu Thr Glu Ile Leu Lys Gly Gly Val Leu Ile Arg Gly Asn Pro
145             150             155             160


Gln Leu Cys Tyr Gln Asp Met Val Leu Trp Lys Asp Val Leu Arg Lys
            165             170             175


Asn Asn Gln Leu Ala Pro Val Asp Met Asp Thr Asn Arg Ser Arg Ala
            180             185             190


Cys Pro Pro Cys Ala Pro Thr Cys Lys Asp Asn His Cys Trp Gly Glu
        195             200             205


Ser Pro Glu Asp Cys Gln Ile Leu Thr Gly Thr Ile Cys Thr Ser Gly
    210             215             220


Cys Ala Arg Cys Lys Gly Arg Leu Pro Thr Asp Cys Cys His Glu Gln
225             230             235             240


Cys Ala Ala Gly Cys Thr Gly Pro Lys His Ser Asp Cys Leu Ala Cys
            245             250             255


Leu His Phe Asn His Ser Gly Ile Cys Glu Leu His Cys Pro Ala Leu
            260             265             270


Ile Thr Tyr Asn Thr Asp Thr Phe Glu Ser Met Leu Asn Pro Glu Gly
        275             280             285


Arg Tyr Thr Phe Gly Ala Ser Cys Val Thr Thr Cys Pro Tyr Asn Tyr
    290             295             300


Leu Ser Thr Glu Val Gly Ser Cys Thr Leu Val Cys Pro Pro Asn Asn
305             310             315             320


Gln Glu Val Thr Ala Glu Asp Gly Thr Gln Arg Cys Glu Lys Cys Ser
            325             330             335
```

Lys Pro Cys Ala Gly Val Cys Tyr Gly Leu Gly Met Glu His Leu Arg
        340   345   350

Gly Ala Arg Ala Ile Thr Ser Asp Asn Ile Gln Glu Phe Ala Gly Cys
        355   360   365

Lys Lys Ile Phe Gly Ser Leu Ala Phe Leu Pro Glu Ser Phe Asp Gly
    370   375   380

Asn Pro Ser Ser Gly Val Ala Pro Leu Lys Pro Glu His Leu Gln Val
385   390   395   400

Phe Glu Thr Leu Glu Glu Ile Thr Gly Tyr Leu Tyr Ile Ser Ala Trp
            405   410   415

Pro Glu Ser Phe Gln Asp Leu Ser Val Phe Gln Asn Leu Arg Val Ile
        420   425   430

Arg Gly Arg Ile Leu His Asp Gly Ala Tyr Ser Leu Thr Leu Gln Gly
        435   440   445

Leu Gly Ile His Ser Leu Gly Leu Arg Ser Leu Arg Glu Leu Gly Ser
    450   455   460

Gly Leu Ala Leu Ile His Arg Asn Thr His Leu Cys Phe Val Asn Thr
465   470   475   480

Val Pro Trp Asp Gln Leu Phe Arg Asn Pro His Gln Ala Leu Leu His
                485   490   495

Ser Gly Asn Arg Pro Glu Glu Ala Cys Gly Leu Glu Gly Leu Val Cys
            500   505   510

Asn Ser Leu Cys Ala Arg Gly His Cys Trp Gly Pro Gly Pro Thr Gln
        515   520   525

Cys Val Asn Cys Ser Gln Phe Leu Arg Gly Gln Glu Cys Val Glu Glu
        530   535   540

Cys Arg Val Trp Lys Gly Leu Pro Arg Glu Tyr Val Arg Gly Lys His
545   550   555   560

Cys Leu Pro Cys His Pro Glu Cys Gln Pro Gln Asn Ser Ser Glu Thr
                565   570   575

Cys Tyr Gly Ser Glu Ala Asp Gln Cys Glu Ala Cys Ala His Tyr Lys
            580   585   590

Asp Ser Ser Ser Cys Val Ala Arg Cys Pro Ser Gly Val Lys Pro Asp
        595   600   605

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```
Leu Ser Tyr Met Pro Ile Trp Lys Tyr Pro Asp Glu Glu Gly Ile Cys
    610                 615                 620

Gln Pro Cys Pro Ile Asn Cys Thr His Ser Cys Val Asp Leu Asp Glu
625                 630                 635                 640

Arg Gly Cys Pro Ala Glu Gln Arg Ala Ser Pro Val Thr Phe Ile Ile
                645                 650                 655

Ala Thr Val Val Gly Val Leu Leu Phe Leu Ile Ile Val Val Val Ile
                660                 665                 670

Gly Ile Leu Ile Lys Arg Arg Arg Gln Lys Ile Arg Lys Tyr Thr Met
        675                 680                 685

Arg Arg Leu Leu Gln Glu Thr Glu Leu Val Glu Pro Leu Thr Pro Ser
    690                 695                 700

Gly Ala Val Pro Asn Gln Ala Gln Met Arg Ile Leu Lys Glu Thr Glu
705                 710                 715                 720

Leu Arg Lys Leu Lys Val Leu Gly Ser Gly Ala Phe Gly Thr Val Tyr
                725                 730                 735

Lys Gly Ile Trp Ile Pro Asp Gly Glu Asn Val Lys Ile Pro Val Ala
            740                 745                 750

Ile Lys Val Leu Arg Glu Asn Thr Ser Pro Lys Ala Asn Lys Glu Ile
        755                 760                 765

Leu Asp Glu Ala Tyr Val Met Ala Gly Val Gly Ser Pro Tyr Val Ser
    770                 775                 780

Arg Leu Leu Gly Ile Cys Leu Thr Ser Thr Val Gln Leu Val Thr Gln
785                 790                 795                 800

Leu Met Pro Tyr Gly Cys Leu Leu Asp His Val Arg Glu His Arg Gly
                805                 810                 815

Arg Leu Gly Ser Gln Asp Leu Leu Asn Trp Cys Val Gln Ile Ala Lys
            820                 825                 830

Gly Met Ser Tyr Leu Glu Glu Val Arg Leu Val His Arg Asp Leu Ala
        835                 840                 845

Ala Arg Asn Val Leu Val Lys Ser Pro Asn His Val Lys Ile Thr Asp
    850                 855                 860

Phe Gly Leu Ala Arg Leu Leu Asp Ile Asp Glu Thr Glu Tyr His Ala
865                 870                 875                 880
```

```
Asp Gly Gly Lys Val Pro Ile Lys Trp Met Ala Leu Glu Ser Ile Leu
            885                 890                 895


Arg Arg Arg Phe Thr His Gln Ser Asp Val Trp Ser Tyr Gly Val Thr
            900                 905                 910


Val Trp Glu Leu Met Thr Phe Gly Ala Lys Pro Tyr Asp Gly Ile Pro
    915                 920                 925


Ala Arg Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu Arg Leu Pro Gln
    930                 935                 940


Pro Pro Ile Cys Thr Ile Asp Val Tyr Met Ile Met Val Lys Cys Trp
945                 950                 955                 960


Met Ile Asp Ser Glu Cys Arg Pro Arg Phe Arg Glu Leu Val Ser Glu
            965                 970                 975


Phe Ser Arg Met Ala Arg Asp Pro Gln Arg Phe Val Val Ile Gln Asn
            980                 985                 990


Glu Asp Leu Gly Pro Ser Ser Pro Met Asp Ser Thr Phe Tyr Arg Ser
            995                 1000                1005


Leu Leu Glu Asp Asp Asp Met Gly Glu Leu Val Asp Ala Glu Glu
    1010                1015                1020


Tyr Leu Val Pro Gln Gln Gly Phe Phe Ser Pro Asp Pro Ala Leu
    1025                1030                1035


Gly Thr Gly Ser Thr Ala His Arg Arg His Arg Ser Ser Ser Ala
    1040                1045                1050


Arg Ser Gly Gly Gly Glu Leu Thr Leu Gly Leu Glu Pro Ser Glu
    1055                1060                1065


Glu Glu Pro Pro Arg Ser Pro Leu Ala Pro Ser Glu Gly Ala Gly
    1070                1075                1080


Ser Asp Val Phe Asp Gly Asp Leu Ala Val Gly Val Thr Lys Gly
    1085                1090                1095


Leu Gln Ser Leu Ser Pro His Asp Leu Ser Pro Leu Gln Arg Tyr
    1100                1105                1110


Ser Glu Asp Pro Thr Leu Pro Leu Pro Pro Glu Thr Asp Gly Tyr
    1115                1120                1125


Val Ala Pro Leu Ala Cys Ser Pro Gln Pro Glu Tyr Val Asn Gln
    1130                1135                1140
```

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```
Pro Glu  Val Arg Pro Gln Ser  Pro Leu Thr Pro Glu  Gly Pro Pro
    1145                1150                1155
```

```
Pro Pro  Ile Arg Pro Ala Gly  Ala Thr Leu Glu Arg  Pro Lys Thr
    1160                1165                1170
```

```
Leu Ser  Pro Gly Lys Asn Gly  Val Val Lys Asp Val  Phe Ala Phe
    1175                1180                1185
```

```
Gly Gly  Ala Val Glu Asn Pro  Glu Tyr Leu Ala Pro  Arg Ala Gly
    1190                1195                1200
```

```
Thr Ala  Ser Gln Pro His Pro  Ser Pro Ala Phe Ser  Pro Ala Phe
    1205                1210                1215
```

```
Asp Asn  Leu Tyr Tyr Trp Asp  Gln Asn Ser Ser Glu  Gln Gly Pro
    1220                1225                1230
```

```
Pro Pro  Ser Thr Phe Glu Gly  Thr Pro Thr Ala Glu  Asn Pro Glu
    1235                1240                1245
```

```
Tyr Leu  Gly Leu Asp Val Pro  Val
    1250                1255
```

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atttgcaacc tccgctgccg tcgccgcagc agccaccaat tcgccagcgg ttcaggtggc   120

tcttgcctcg atgtcctagc ctaggggccc ccgggccgga cttggctggg ctcccttcac   180

cctctgcgga gtc atg agg gcg aac gac gct ctg cag gtg ctg ggc ttg     229
            Met Arg Ala Asn Asp Ala Leu Gln Val Leu Gly Leu
             1               5                   10

ctt ttc agc ctg gcc cgg ggc tcc gag gtg ggc aac tct cag gca gtg   277
Leu Phe Ser Leu Ala Arg Gly Ser Glu Val Gly Asn Ser Gln Ala Val
         15                  20                  25

tgt cct ggg act ctg aat ggc ctg agt gtg acc ggc gat gct gag aac   325
Cys Pro Gly Thr Leu Asn Gly Leu Ser Val Thr Gly Asp Ala Glu Asn
     30                  35                  40

caa tac cag aca ctg tac aag ctc tac gag agg tgt gag gtg gtg atg   373
Gln Tyr Gln Thr Leu Tyr Lys Leu Tyr Glu Arg Cys Glu Val Val Met
45                  50                  55                  60
```

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```
ggg aac ctt gag att gtg ctc acg gga cac aat gcc gac ctc tcc ttc     421
Gly Asn Leu Glu Ile Val Leu Thr Gly His Asn Ala Asp Leu Ser Phe
                65                  70                  75

ctg cag tgg att cga gaa gtg aca ggc tat gtc ctc gtg gcc atg aat     469
Leu Gln Trp Ile Arg Glu Val Thr Gly Tyr Val Leu Val Ala Met Asn
            80                  85                  90

gaa ttc tct act cta cca ttg ccc aac ctc cgc gtg gtg cga ggg acc     517
Glu Phe Ser Thr Leu Pro Leu Pro Asn Leu Arg Val Val Arg Gly Thr
        95                  100                 105

cag gtc tac gat ggg aag ttt gcc atc ttc gtc atg ttg aac tat aac     565
Gln Val Tyr Asp Gly Lys Phe Ala Ile Phe Val Met Leu Asn Tyr Asn
    110                 115                 120

acc aac tcc agc cac gct ctg cgc cag ctc cgc ttg act cag ctc acc     613
Thr Asn Ser Ser His Ala Leu Arg Gln Leu Arg Leu Thr Gln Leu Thr
125                 130                 135                 140

gag att ctg tca ggg ggt gtt tat att gag aag aac gat aag ctt tgt     661
Glu Ile Leu Ser Gly Gly Val Tyr Ile Glu Lys Asn Asp Lys Leu Cys
                145                 150                 155

cac atg gac aca att gac tgg agg gac atc gtg agg gac cga gat gct     709
His Met Asp Thr Ile Asp Trp Arg Asp Ile Val Arg Asp Arg Asp Ala
                160                 165                 170

gag ata gtg gtg aag gac aat ggc aga agc tgt ccc ccc tgt cat gag     757
Glu Ile Val Val Lys Asp Asn Gly Arg Ser Cys Pro Pro Cys His Glu
            175                 180                 185

gtt tgc aag ggg cga tgc tgg ggt cct gga tca gaa gac tgc cag aca     805
Val Cys Lys Gly Arg Cys Trp Gly Pro Gly Ser Glu Asp Cys Gln Thr
            190                 195                 200

ttg acc aag acc atc tgt gct cct cag tgt aat ggt cac tgc ttt ggg     853
Leu Thr Lys Thr Ile Cys Ala Pro Gln Cys Asn Gly His Cys Phe Gly
205                 210                 215                 220

ccc aac ccc aac cag tgc tgc cat gat gag tgt gcc ggg ggc tgc tca     901
Pro Asn Pro Asn Gln Cys Cys His Asp Glu Cys Ala Gly Gly Cys Ser
                225                 230                 235

ggc cct cag gac aca gac tgc ttt gcc tgc cgg cac ttc aat gac agt     949
Gly Pro Gln Asp Thr Asp Cys Phe Ala Cys Arg His Phe Asn Asp Ser
                240                 245                 250

gga gcc tgt gta cct cgc tgt cca cag cct ctt gtc tac aac aag cta     997
Gly Ala Cys Val Pro Arg Cys Pro Gln Pro Leu Val Tyr Asn Lys Leu
            255                 260                 265

act ttc cag ctg gaa ccc aat ccc cac acc aag tat cag tat gga gga    1045
Thr Phe Gln Leu Glu Pro Asn Pro His Thr Lys Tyr Gln Tyr Gly Gly
        270                 275                 280

gtt tgt gta gcc agc tgt ccc cat aac ttt gtg gtg gat caa aca tcc    1093
Val Cys Val Ala Ser Cys Pro His Asn Phe Val Val Asp Gln Thr Ser
285                 290                 295                 300

tgt gtc agg gcc tgt cct cct gac aag atg gaa gta gat aaa aat ggg    1141
Cys Val Arg Ala Cys Pro Pro Asp Lys Met Glu Val Asp Lys Asn Gly
                305                 310                 315

ctc aag atg tgt gag cct tgt ggg gga cta tgt ccc aaa gcc tgt gag    1189
Leu Lys Met Cys Glu Pro Cys Gly Gly Leu Cys Pro Lys Ala Cys Glu
            320                 325                 330
```

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gga aca ggc tct ggg agc cgc ttc cag act gtg gac tcg agc aac att      1237
Gly Thr Gly Ser Gly Ser Arg Phe Gln Thr Val Asp Ser Ser Asn Ile
        335                 340                 345

gat gga ttt gtg aac tgc acc aag atc ctg ggc aac ctg gac ttt ctg      1285
Asp Gly Phe Val Asn Cys Thr Lys Ile Leu Gly Asn Leu Asp Phe Leu
    350                 355                 360

atc acc ggc ctc aat gga gac ccc tgg cac aag atc cct gcc ctg gac      1333
Ile Thr Gly Leu Asn Gly Asp Pro Trp His Lys Ile Pro Ala Leu Asp
365                 370                 375                 380

cca gag aag ctc aat gtc ttc cgg aca gta cgg gag atc aca ggt tac      1381
Pro Glu Lys Leu Asn Val Phe Arg Thr Val Arg Glu Ile Thr Gly Tyr
                385                 390                 395

ctg aac atc cag tcc tgg ccg ccc cac atg cac aac ttc agt gtt ttt      1429
Leu Asn Ile Gln Ser Trp Pro Pro His Met His Asn Phe Ser Val Phe
                400                 405                 410

tcc aat ttg aca acc att gga ggc aga agc ctc tac aac cgg ggc ttc      1477
Ser Asn Leu Thr Thr Ile Gly Gly Arg Ser Leu Tyr Asn Arg Gly Phe
                415                 420                 425

tca ttg ttg atc atg aag aac ttg aat gtc aca tct ctg ggc ttc cga      1525
Ser Leu Leu Ile Met Lys Asn Leu Asn Val Thr Ser Leu Gly Phe Arg
    430                 435                 440

tcc ctg aag gaa att agt gct ggg cgt atc tat ata agt gcc aat agg      1573
Ser Leu Lys Glu Ile Ser Ala Gly Arg Ile Tyr Ile Ser Ala Asn Arg
445                 450                 455                 460

cag ctc tgc tac cac cac tct ttg aac tgg acc aag gtg ctt cgg ggg      1621
Gln Leu Cys Tyr His His Ser Leu Asn Trp Thr Lys Val Leu Arg Gly
                465                 470                 475

cct acg gaa gag cga cta gac atc aag cat aat cgg ccg cgc aga gac      1669
Pro Thr Glu Glu Arg Leu Asp Ile Lys His Asn Arg Pro Arg Arg Asp
                480                 485                 490

tgc gtg gca gag ggc aaa gtg tgt gac cca ctg tgc tcc tct ggg gga      1717
Cys Val Ala Glu Gly Lys Val Cys Asp Pro Leu Cys Ser Ser Gly Gly
                495                 500                 505

tgc tgg ggc cca ggc cct ggt cag tgc ttg tcc tgt cga aat tat agc      1765
Cys Trp Gly Pro Gly Pro Gly Gln Cys Leu Ser Cys Arg Asn Tyr Ser
    510                 515                 520

cga gga ggt gtc tgt gtg acc cac tgc aac ttt ctg aat ggg gag cct      1813
Arg Gly Gly Val Cys Val Thr His Cys Asn Phe Leu Asn Gly Glu Pro
525                 530                 535                 540

cga gaa ttt gcc cat gag gcc gaa tgc ttc tcc tgc cac ccg gaa tgc      1861
Arg Glu Phe Ala His Glu Ala Glu Cys Phe Ser Cys His Pro Glu Cys
                545                 550                 555

caa ccc atg gag ggc act gcc aca tgc aat ggc tcg ggc tct gat act      1909
Gln Pro Met Glu Gly Thr Ala Thr Cys Asn Gly Ser Gly Ser Asp Thr
                560                 565                 570

tgt gct caa tgt gcc cat ttt cga gat ggg ccc cac tgt gtg agc agc      1957
Cys Ala Gln Cys Ala His Phe Arg Asp Gly Pro His Cys Val Ser Ser
    575                 580                 585

tgc ccc cat gga gtc cta ggt gcc aag ggc cca atc tac aag tac cca      2005
Cys Pro His Gly Val Leu Gly Ala Lys Gly Pro Ile Tyr Lys Tyr Pro
    590                 595                 600
```

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gat gtt cag aat gaa tgt cgg ccc tgc cat gag aac tgc acc cag ggg    2053
Asp Val Gln Asn Glu Cys Arg Pro Cys His Glu Asn Cys Thr Gln Gly
605                     610                 615                 620

tgt aaa gga cca gag ctt caa gac tgt tta gga caa aca ctg gtg ctg    2101
Cys Lys Gly Pro Glu Leu Gln Asp Cys Leu Gly Gln Thr Leu Val Leu
                    625                 630                 635

atc ggc aaa acc cat ctg aca atg gct ttg aca gtg ata gca gga ttg    2149
Ile Gly Lys Thr His Leu Thr Met Ala Leu Thr Val Ile Ala Gly Leu
                640                 645                 650

gta gtg att ttc atg atg ctg ggc ggc act ttt ctc tac tgg cgt ggg    2197
Val Val Ile Phe Met Met Leu Gly Gly Thr Phe Leu Tyr Trp Arg Gly
                655                 660                 665

cgc cgg att cag aat aaa agg gct atg agg cga tac ttg gaa cgg ggt    2245
Arg Arg Ile Gln Asn Lys Arg Ala Met Arg Arg Tyr Leu Glu Arg Gly
    670                 675                 680

gag agc ata gag cct ctg gac ccc agt gag aag gct aac aaa gtc ttg    2293
Glu Ser Ile Glu Pro Leu Asp Pro Ser Glu Lys Ala Asn Lys Val Leu
685                 690                 695                 700

gcc aga atc ttc aaa gag aca gag cta agg aag ctt aaa gtg ctt ggc    2341
Ala Arg Ile Phe Lys Glu Thr Glu Leu Arg Lys Leu Lys Val Leu Gly
                705                 710                 715

tcg ggt gtc ttt gga act gtg cac aaa gga gtg tgg atc cct gag ggt    2389
Ser Gly Val Phe Gly Thr Val His Lys Gly Val Trp Ile Pro Glu Gly
                720                 725                 730

gaa tca atc aag att cca gtc tgc att aaa gtc att gag gac aag agt    2437
Glu Ser Ile Lys Ile Pro Val Cys Ile Lys Val Ile Glu Asp Lys Ser
                735                 740                 745

gga cgg cag agt ttt caa gct gtg aca gat cat atg ctg gcc att ggc    2485
Gly Arg Gln Ser Phe Gln Ala Val Thr Asp His Met Leu Ala Ile Gly
    750                 755                 760

agc ctg gac cat gcc cac att gta agg ctg ctg gga cta tgc cca ggg    2533
Ser Leu Asp His Ala His Ile Val Arg Leu Leu Gly Leu Cys Pro Gly
765                 770                 775                 780

tca tct ctg cag ctt gtc act caa tat ttg cct ctg ggt tct ctg ctg    2581
Ser Ser Leu Gln Leu Val Thr Gln Tyr Leu Pro Leu Gly Ser Leu Leu
                785                 790                 795

gat cat gtg aga caa cac cgg ggg gca ctg ggg cca cag ctg ctg ctc    2629
Asp His Val Arg Gln His Arg Gly Ala Leu Gly Pro Gln Leu Leu Leu
                800                 805                 810

aac tgg gga gta caa att gcc aag gga atg tac tac ctt gag gaa cat    2677
Asn Trp Gly Val Gln Ile Ala Lys Gly Met Tyr Tyr Leu Glu Glu His
                815                 820                 825

ggt atg gtg cat aga aac ctg gct gcc cga aac gtg cta ctc aag tca    2725
Gly Met Val His Arg Asn Leu Ala Ala Arg Asn Val Leu Leu Lys Ser
    830                 835                 840

ccc agt cag gtt cag gtg gca gat ttt ggt gtg gct gac ctg ctg cct    2773
Pro Ser Gln Val Gln Val Ala Asp Phe Gly Val Ala Asp Leu Leu Pro
845                 850                 855                 860

cct gat gat aag cag ctg cta tac agt gag gcc aag act cca att aag    2821
Pro Asp Asp Lys Gln Leu Leu Tyr Ser Glu Ala Lys Thr Pro Ile Lys
                865                 870                 875
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tgg atg gcc ctt gag agt atc cac ttt ggg aaa tac aca cac cag agt        2869
Trp Met Ala Leu Glu Ser Ile His Phe Gly Lys Tyr Thr His Gln Ser
        880                 885                 890

gat gtc tgg agc tat ggt gtg aca gtt tgg gag ttg atg acc ttc ggg        2917
Asp Val Trp Ser Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly
        895                 900                 905

gca gag ccc tat gca ggg cta cga ttg gct gaa gta cca gac ctg cta        2965
Ala Glu Pro Tyr Ala Gly Leu Arg Leu Ala Glu Val Pro Asp Leu Leu
        910                 915                 920

gag aag ggg gag cgg ttg gca cag ccc cag atc tgc aca att gat gtc        3013
Glu Lys Gly Glu Arg Leu Ala Gln Pro Gln Ile Cys Thr Ile Asp Val
925                 930                 935                 940

tac atg gtg atg gtc aag tgt tgg atg att gat gag aac att cgc cca        3061
Tyr Met Val Met Val Lys Cys Trp Met Ile Asp Glu Asn Ile Arg Pro
            945                 950                 955

acc ttt aaa gaa cta gcc aat gag ttc acc agg atg gcc cga gac cca        3109
Thr Phe Lys Glu Leu Ala Asn Glu Phe Thr Arg Met Ala Arg Asp Pro
        960                 965                 970

cca cgg tat ctg gtc ata aag aga gag agt ggg cct gga ata gcc cct        3157
Pro Arg Tyr Leu Val Ile Lys Arg Glu Ser Gly Pro Gly Ile Ala Pro
        975                 980                 985

ggg cca gag ccc cat ggt ctg aca aac aag aag cta gag gaa gta gag        3205
Gly Pro Glu Pro His Gly Leu Thr Asn Lys Lys Leu Glu Glu Val Glu
        990                 995                 1000

ctg  gag cca gaa cta gac  cta gac cta gac ttg  gaa gca gag gag         3250
Leu Glu Pro Glu Leu Asp  Leu Asp Leu Asp Leu  Glu Ala Glu Glu
1005                1010                1015

gac aac ctg gca acc acc  aca ctg ggc tcc gcc  ctc agc cta cca         3295
Asp Asn Leu Ala Thr Thr  Thr Leu Gly Ser Ala  Leu Ser Leu Pro
1020                1025                1030

gtt gga aca ctt aat cgg  cca cgt ggg agc cag  agc ctt tta agt         3340
Val Gly Thr Leu Asn Arg  Pro Arg Gly Ser Gln  Ser Leu Leu Ser
1035                1040                1045

cca tca tct gga tac atg  ccc atg aac cag ggt  aat ctt ggg gag         3385
Pro Ser Ser Gly Tyr Met  Pro Met Asn Gln Gly  Asn Leu Gly Glu
1050                1055                1060

tct tgc cag gag tct gca  gtt tct ggg agc agt  gaa cgg tgc ccc         3430
Ser Cys Gln Glu Ser Ala  Val Ser Gly Ser Ser  Glu Arg Cys Pro
1065                1070                1075

cgt cca gtc tct cta cac  cca atg cca cgg gga  tgc ctg gca tca         3475
Arg Pro Val Ser Leu His  Pro Met Pro Arg Gly  Cys Leu Ala Ser
1080                1085                1090

gag tca tca gag ggg cat  gta aca ggc tct gag  gct gag ctc cag         3520
Glu Ser Ser Glu Gly His  Val Thr Gly Ser Glu  Ala Glu Leu Gln
1095                1100                1105

gag aaa gtg tca atg tgt  agg agc cgg agc agg  agc cgg agc cca         3565
Glu Lys Val Ser Met Cys  Arg Ser Arg Ser Arg  Ser Arg Ser Pro
1110                1115                1120

cgg cca cgc gga gat agc  gcc tac cat tcc cag  cgc cac agt ctg         3610
Arg Pro Arg Gly Asp Ser  Ala Tyr His Ser Gln  Arg His Ser Leu
1125                1130                1135
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ctg  act cct gtt acc cca  ctc tcc cca ccc ggg  tta gag gaa gag      3655
Leu  Thr Pro Val Thr Pro  Leu Ser Pro Pro Gly  Leu Glu Glu Glu
1140             1145              1150

gat  gtc aac ggt tat gtc  atg cca gat aca cac  ctc aaa ggt act      3700
Asp  Val Asn Gly Tyr Val  Met Pro Asp Thr His  Leu Lys Gly Thr
1155             1160              1165

ccc  tcc tcc cgg gaa ggc  acc ctt tct tca gtg  ggt ctc agt tct      3745
Pro  Ser Ser Arg Glu Gly  Thr Leu Ser Ser Val  Gly Leu Ser Ser
1170             1175              1180

gtc  ctg ggt act gaa gaa  gaa gat gaa gat gag  gag tat gaa tac      3790
Val  Leu Gly Thr Glu Glu  Glu Asp Glu Asp Glu  Glu Tyr Glu Tyr
1185             1190              1195

atg  aac cgg agg aga agg  cac agt cca cct cat  ccc cct agg cca      3835
Met  Asn Arg Arg Arg Arg  His Ser Pro Pro His  Pro Pro Arg Pro
1200             1205              1210

agt  tcc ctt gag gag ctg  ggt tat gag tac atg  gat gtg ggg tca      3880
Ser  Ser Leu Glu Glu Leu  Gly Tyr Glu Tyr Met  Asp Val Gly Ser
1215             1220              1225

gac  ctc agt gcc tct ctg  ggc agc aca cag agt  tgc cca ctc cac      3925
Asp  Leu Ser Ala Ser Leu  Gly Ser Thr Gln Ser  Cys Pro Leu His
1230             1235              1240

cct  gta ccc atc atg ccc  act gca ggc aca act  cca gat gaa gac      3970
Pro  Val Pro Ile Met Pro  Thr Ala Gly Thr Thr  Pro Asp Glu Asp
1245             1250              1255

tat  gaa tat atg aat cgg  caa cga gat gga ggt  ggt cct ggg ggt      4015
Tyr  Glu Tyr Met Asn Arg  Gln Arg Asp Gly Gly  Gly Pro Gly Gly
1260             1265              1270

gat  tat gca gcc atg ggg  gcc tgc cca gca tct  gag caa ggg tat      4060
Asp  Tyr Ala Ala Met Gly  Ala Cys Pro Ala Ser  Glu Gln Gly Tyr
1275             1280              1285

gaa  gag atg aga gct ttt  cag ggg cct gga cat  cag gcc ccc cat      4105
Glu  Glu Met Arg Ala Phe  Gln Gly Pro Gly His  Gln Ala Pro His
1290             1295              1300

gtc  cat tat gcc cgc cta  aaa act cta cgt agc  tta gag gct aca      4150
Val  His Tyr Ala Arg Leu  Lys Thr Leu Arg Ser  Leu Glu Ala Thr
1305             1310              1315

gac  tct gcc ttt gat aac  cct gat tac tgg cat  agc agg ctt ttc      4195
Asp  Ser Ala Phe Asp Asn  Pro Asp Tyr Trp His  Ser Arg Leu Phe
1320             1325              1330

ccc  aag gct aat gcc cag  aga acg taa ctcctgctcc ctgtggcact         4242
Pro  Lys Ala Asn Ala Gln  Arg Thr
1335             1340

caggagcat ttaatggcag ctagtgcctt tagagggtac cgtcttctcc ctattccctc     4302

tctctcccag gtcccagccc ctttttcccca gtcccagaca attccattca atctttggag    4362

gctttaaac attttgacac aaaattctta tggtatgtag ccagctgtgc actttcttct     4422

ctttcccaac cccaggaaag gttttcctta ttttgtgtgc tttcccagtc ccattcctca     4482

gcttcttcac aggcactcct ggagatatga aggattactc tccatatccc ttcctctcag    4542

gctcttgact acttggaact aggctcttat gtgtgccttt gtttcccatc agactgtcaa     4602
```

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gaagaggaaa gggaggaaac ctagcagagg aaagtgtaat tttggtttat gactcttaac    4662
cccctagaaa gacagaagct taaaatctgt gaagaaagag gttaggagta gatattgatt    4722
actatcataa ttcagcactt aactatgagc caggcatcat actaaacttc acctacatta    4782
tctcacttag tcctttatca tccttaaaac aattctgtga catacatatt atctcatttt    4842
acacaaaggg aagtcgggca tggtggctca tgcctgtaat ctcagcactt tgggaggctg    4902
aggcagaagg attacctgag gcaaggagtt tgagaccagc ttagccaaca tagtaagacc    4962
cccatctctt taaaaaaaaa aaaaaaaaa aaaaaaaaac tttagaactg ggtgcagtgg    5022
ctcatgcctg taatcccagc cagcactttg ggaggctgag atgggaagat cacttgagcc    5082
cagaattaga gataagccta tggaaacata gcaagacact gtctctacag gggaaaaaaa    5142
aaaaagaaac tgagccttaa agagatgaaa taaattaagc agtagatcca ggatgcaaaa    5202
tcctcccaat tcctgtgcat gtgctcttat tgtaaggtgc caagaaaaac tgatttaagt    5262
tacagccctt gtttaagggg cactgtttct tgttttgca ctgaatcaag tctaacccca    5322
acagccacat cctcctatac ctagacatct catctcagga agtggtggtg ggggtagtca    5382
gaaggaaaaa taactggaca tctttgtgta aaccataatc cacatgtgcc gtaaatgatc    5442
ttcactcctt atccgagggc aaattcacaa ggatccccaa gatccacttt tagaagccat    5502
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tctcatcca
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<213>  Homo sapiens

<400>  15
Met Arg Ala Asn Asp Ala Leu Gln Val Leu Gly Leu Leu Phe Ser Leu
1               5               10                  15

Ala Arg Gly Ser Glu Val Gly Asn Ser Gln Ala Val Cys Pro Gly Thr
            20                  25                  30

Leu Asn Gly Leu Ser Val Thr Gly Asp Ala Glu Asn Gln Tyr Gln Thr
            35                  40                  45

Leu Tyr Lys Leu Tyr Glu Arg Cys Glu Val Val Met Gly Asn Leu Glu
        50                  55                  60

Ile Val Leu Thr Gly His Asn Ala Asp Leu Ser Phe Leu Gln Trp Ile
65                  70                  75                  80

Arg Glu Val Thr Gly Tyr Val Leu Val Ala Met Asn Glu Phe Ser Thr
                85                  90                  95

Leu Pro Leu Pro Asn Leu Arg Val Val Arg Gly Thr Gln Val Tyr Asp
            100                 105                 110
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Gly Lys Phe Ala Ile Phe Val Met Leu Asn Tyr Asn Thr Asn Ser Ser
        115                 120             125

His Ala Leu Arg Gln Leu Arg Leu Thr Gln Leu Thr Glu Ile Leu Ser
    130                 135             140

Gly Gly Val Tyr Ile Glu Lys Asn Asp Lys Leu Cys His Met Asp Thr
145                 150             155                 160

Ile Asp Trp Arg Asp Ile Val Arg Asp Arg Asp Ala Glu Ile Val Val
            165                 170             175

Lys Asp Asn Gly Arg Ser Cys Pro Pro Cys His Glu Val Cys Lys Gly
            180             185             190

Arg Cys Trp Gly Pro Gly Ser Glu Asp Cys Gln Thr Leu Thr Lys Thr
        195             200             205

Ile Cys Ala Pro Gln Cys Asn Gly His Cys Phe Gly Pro Asn Pro Asn
        210             215             220

Gln Cys Cys His Asp Glu Cys Ala Gly Gly Cys Ser Gly Pro Gln Asp
225             230             235                 240

Thr Asp Cys Phe Ala Cys Arg His Phe Asn Asp Ser Gly Ala Cys Val
            245             250             255

Pro Arg Cys Pro Gln Pro Leu Val Tyr Asn Lys Leu Thr Phe Gln Leu
        260             265             270

Glu Pro Asn Pro His Thr Lys Tyr Gln Tyr Gly Gly Val Cys Val Ala
    275             280             285

Ser Cys Pro His Asn Phe Val Val Asp Gln Thr Ser Cys Val Arg Ala
    290             295             300

Cys Pro Pro Asp Lys Met Glu Val Asp Lys Asn Gly Leu Lys Met Cys
305             310             315                 320

Glu Pro Cys Gly Gly Leu Cys Pro Lys Ala Cys Glu Gly Thr Gly Ser
        325             330             335

Gly Ser Arg Phe Gln Thr Val Asp Ser Ser Asn Ile Asp Gly Phe Val
        340             345             350

Asn Cys Thr Lys Ile Leu Gly Asn Leu Asp Phe Leu Ile Thr Gly Leu
    355             360             365

Asn Gly Asp Pro Trp His Lys Ile Pro Ala Leu Asp Pro Glu Lys Leu
370             375             380
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Asn Val Phe Arg Thr Val Arg Glu Ile Thr Gly Tyr Leu Asn Ile Gln
385   390   395   400

Ser Trp Pro Pro His Met His Asn Phe Ser Val Phe Ser Asn Leu Thr
               405   410   415

Thr Ile Gly Gly Arg Ser Leu Tyr Asn Arg Gly Phe Ser Leu Leu Ile
         420   425   430

Met Lys Asn Leu Asn Val Thr Ser Leu Gly Phe Arg Ser Leu Lys Glu
         435   440   445

Ile Ser Ala Gly Arg Ile Tyr Ile Ser Ala Asn Arg Gln Leu Cys Tyr
     450   455   460

His His Ser Leu Asn Trp Thr Lys Val Leu Arg Gly Pro Thr Glu Glu
465   470   475   480

Arg Leu Asp Ile Lys His Asn Arg Pro Arg Arg Asp Cys Val Ala Glu
               485   490   495

Gly Lys Val Cys Asp Pro Leu Cys Ser Ser Gly Gly Cys Trp Gly Pro
               500   505   510

Gly Pro Gly Gln Cys Leu Ser Cys Arg Asn Tyr Ser Arg Gly Gly Val
     515   520   525

Cys Val Thr His Cys Asn Phe Leu Asn Gly Glu Pro Arg Glu Phe Ala
     530   535   540

His Glu Ala Glu Cys Phe Ser Cys His Pro Glu Cys Gln Pro Met Glu
545   550   555   560

Gly Thr Ala Thr Cys Asn Gly Ser Gly Ser Asp Thr Cys Ala Gln Cys
               565   570   575

Ala His Phe Arg Asp Gly Pro His Cys Val Ser Ser Cys Pro His Gly
               580   585   590

Val Leu Gly Ala Lys Gly Pro Ile Tyr Lys Tyr Pro Asp Val Gln Asn
         595   600   605

Glu Cys Arg Pro Cys His Glu Asn Cys Thr Gln Gly Cys Lys Gly Pro
     610   615   620

Glu Leu Gln Asp Cys Leu Gly Gln Thr Leu Val Leu Ile Gly Lys Thr
625   630   635   640

His Leu Thr Met Ala Leu Thr Val Ile Ala Gly Leu Val Val Ile Phe
               645   650   655

Met Met Leu Gly Gly Thr Phe Leu Tyr Trp Arg Gly Arg Arg Ile Gln
         660   665   670

Asn Lys Arg Ala Met Arg Arg Tyr Leu Glu Arg Gly Glu Ser Ile Glu
         675   680   685

Pro Leu Asp Pro Ser Glu Lys Ala Asn Lys Val Leu Ala Arg Ile Phe
    690   695   700

Lys Glu Thr Glu Leu Arg Lys Leu Lys Val Leu Gly Ser Gly Val Phe
705   710   715   720

Gly Thr Val His Lys Gly Val Trp Ile Pro Glu Gly Glu Ser Ile Lys
             725   730   735

Ile Pro Val Cys Ile Lys Val Ile Glu Asp Lys Ser Gly Arg Gln Ser
             740   745   750

Phe Gln Ala Val Thr Asp His Met Leu Ala Ile Gly Ser Leu Asp His
         755   760   765

Ala His Ile Val Arg Leu Leu Gly Leu Cys Pro Gly Ser Ser Leu Gln
    770   775   780

Leu Val Thr Gln Tyr Leu Pro Leu Gly Ser Leu Leu Asp His Val Arg
785   790   795   800

Gln His Arg Gly Ala Leu Gly Pro Gln Leu Leu Leu Asn Trp Gly Val
             805   810   815

Gln Ile Ala Lys Gly Met Tyr Tyr Leu Glu Glu His Gly Met Val His
             820   825   830

Arg Asn Leu Ala Ala Arg Asn Val Leu Leu Lys Ser Pro Ser Gln Val
         835   840   845

Gln Val Ala Asp Phe Gly Val Ala Asp Leu Leu Pro Pro Asp Asp Lys
    850   855   860

Gln Leu Leu Tyr Ser Glu Ala Lys Thr Pro Ile Lys Trp Met Ala Leu
865   870   875   880

Glu Ser Ile His Phe Gly Lys Tyr Thr His Gln Ser Asp Val Trp Ser
             885   890   895

Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly Ala Glu Pro Tyr
         900   905   910

Ala Gly Leu Arg Leu Ala Glu Val Pro Asp Leu Leu Glu Lys Gly Glu
    915   920   925

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Arg Leu Ala Gln Pro Gln Ile Cys Thr Ile Asp Val Tyr Met Val Met
    930                 935                 940

Val Lys Cys Trp Met Ile Asp Glu Asn Ile Arg Pro Thr Phe Lys Glu
945                 950                 955                 960

Leu Ala Asn Glu Phe Thr Arg Met Ala Arg Asp Pro Pro Arg Tyr Leu
                965                 970                 975

Val Ile Lys Arg Glu Ser Gly Pro Gly Ile Ala Pro Gly Pro Glu Pro
            980                 985                 990

His Gly Leu Thr Asn Lys Lys Leu Glu Glu Val Glu Leu Glu Pro Glu
    995                 1000                1005

Leu Asp Leu Asp Leu Asp Leu Glu Ala Glu Glu Asp Asn Leu Ala
    1010            1015                1020

Thr Thr Thr Leu Gly Ser Ala Leu Ser Leu Pro Val Gly Thr Leu
    1025            1030                1035

Asn Arg Pro Arg Gly Ser Gln Ser Leu Leu Ser Pro Ser Ser Gly
    1040            1045                1050

Tyr Met Pro Met Asn Gln Gly Asn Leu Gly Glu Ser Cys Gln Glu
    1055            1060                1065

Ser Ala Val Ser Gly Ser Ser Glu Arg Cys Pro Arg Pro Val Ser
    1070            1075                1080

Leu His Pro Met Pro Arg Gly Cys Leu Ala Ser Glu Ser Ser Glu
    1085            1090                1095

Gly His Val Thr Gly Ser Glu Ala Glu Leu Gln Glu Lys Val Ser
    1100            1105                1110

Met Cys Arg Ser Arg Ser Arg Ser Arg Ser Pro Arg Pro Arg Gly
    1115            1120                1125

Asp Ser Ala Tyr His Ser Gln Arg His Ser Leu Leu Thr Pro Val
    1130            1135                1140

Thr Pro Leu Ser Pro Pro Gly Leu Glu Glu Glu Asp Val Asn Gly
    1145            1150                1155

Tyr Val Met Pro Asp Thr His Leu Lys Gly Thr Pro Ser Ser Arg
    1160            1165                1170

Glu Gly Thr Leu Ser Ser Val Gly Leu Ser Ser Val Leu Gly Thr
    1175            1180                1185
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Glu Glu  Glu Asp Glu Asp Glu   Glu Tyr Glu Tyr Met   Asn Arg Arg
    1190              1195               1200


Arg Arg  His Ser Pro Pro His   Pro Pro Arg Pro Ser   Ser Leu Glu
    1205              1210               1215


Glu Leu  Gly Tyr Glu Tyr Met   Asp Val Gly Ser Asp   Leu Ser Ala
    1220              1225               1230


Ser Leu  Gly Ser Thr Gln Ser   Cys Pro Leu His Pro   Val Pro Ile
    1235              1240               1245


Met Pro  Thr Ala Gly Thr Thr   Pro Asp Glu Asp Tyr   Glu Tyr Met
    1250              1255               1260


Asn Arg  Gln Arg Asp Gly Gly   Gly Pro Gly Gly Asp   Tyr Ala Ala
    1265              1270               1275


Met Gly  Ala Cys Pro Ala Ser   Glu Gln Gly Tyr Glu   Glu Met Arg
    1280              1285               1290


Ala Phe  Gln Gly Pro Gly His   Gln Ala Pro His Val   His Tyr Ala
    1295              1300               1305


Arg Leu  Lys Thr Leu Arg Ser   Leu Glu Ala Thr Asp   Ser Ala Phe
    1310              1315               1320


Asp Asn  Pro Asp Tyr Trp His   Ser Arg Leu Phe Pro   Lys Ala Asn
    1325              1330               1335


Ala Gln  Arg Thr
    1340



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<213>  Mus musculus


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<221>  CDS
<222>  (1)..(4020)


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Met Ser Ala Ile Gly Thr Leu Gln Val Leu Gly Phe Leu Leu Ser Leu
1                 5                  10                  15

gcc cgg ggt tcc gag atg ggc aac tct cag gca gta tgt cct ggg act      96
Ala Arg Gly Ser Glu Met Gly Asn Ser Gln Ala Val Cys Pro Gly Thr
            20                  25                  30

cta aac ggg ctg agt gtg acc ggc gat gct gac aac cag tac cag aca     144
Leu Asn Gly Leu Ser Val Thr Gly Asp Ala Asp Asn Gln Tyr Gln Thr
        35                  40                  45
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ctg tac aaa ctc tat gag aag tgt gag gtg gtc atg ggt aac ctg gag    . 192
Leu Tyr Lys Leu Tyr Glu Lys Cys Glu Val Val Met Gly Asn Leu Glu
    50              55              60

att gtg ctt acg gga cac aat gct gat ctt tcc ttc ctg caa tgg atc      240
Ile Val Leu Thr Gly His Asn Ala Asp Leu Ser Phe Leu Gln Trp Ile
65              70              75              80

cga gaa gtg aca ggc tat gta ctg gtg gcc atg aat gaa ttc tct gta      288
Arg Glu Val Thr Gly Tyr Val Leu Val Ala Met Asn Glu Phe Ser Val
                85              90              95

ctg ccc tta cct aac ctc cga gtg gtc cgg gga acc cag gtc tac gat      336
Leu Pro Leu Pro Asn Leu Arg Val Val Arg Gly Thr Gln Val Tyr Asp
            100             105             110

ggg aag ttt gcc atc ttt gtc atg ttg aac tac aat acc aac tcc agc      384
Gly Lys Phe Ala Ile Phe Val Met Leu Asn Tyr Asn Thr Asn Ser Ser
            115             120             125

cat gct ctg cgc cag ctc cgg ttc act cag ctt act gag att ctg tta      432
His Ala Leu Arg Gln Leu Arg Phe Thr Gln Leu Thr Glu Ile Leu Leu
        130             135             140

ggg ggc gtt tac att gag aag aat gac aaa ctt tgc cac atg gat aca      480
Gly Gly Val Tyr Ile Glu Lys Asn Asp Lys Leu Cys His Met Asp Thr
145             150             155             160

att gac tgg agg gac atc gtg agg gtt cca gac gct gag ata gtg gtg      528
Ile Asp Trp Arg Asp Ile Val Arg Val Pro Asp Ala Glu Ile Val Val
                165             170             175

aag aac aac ggg ggg aac tgt cca ccc tgt cac gaa gtc tgc aag ggg      576
Lys Asn Asn Gly Gly Asn Cys Pro Pro Cys His Glu Val Cys Lys Gly
            180             185             190

cga tgc tgg ggg cct gga cca gaa gac tgc cag ata ttg acc aag acc      624
Arg Cys Trp Gly Pro Gly Pro Glu Asp Cys Gln Ile Leu Thr Lys Thr
        195             200             205

atc tgt gcc cct cag tgt aac ggt cgc tgc ttc ggg ccc aat cct aac      672
Ile Cys Ala Pro Gln Cys Asn Gly Arg Cys Phe Gly Pro Asn Pro Asn
        210             215             220

cag tgc tgc cac gat gaa tgt gca ggt ggc tgc tct gga ccc cag gac      720
Gln Cys Cys His Asp Glu Cys Ala Gly Gly Cys Ser Gly Pro Gln Asp
225             230             235             240

aca gat tgc ttc gcc tgc cga cac ttc aat gac agt ggt gcc tgt gtg      768
Thr Asp Cys Phe Ala Cys Arg His Phe Asn Asp Ser Gly Ala Cys Val
                245             250             255

ccc agg tgt cca gcg ccc ctt gtg tac aac aag cta acg ttc cag ctt      816
Pro Arg Cys Pro Ala Pro Leu Val Tyr Asn Lys Leu Thr Phe Gln Leu
            260             265             270

gag ccc aac ccc cat atc aag tat cag tac gga gga gtc tgt gtt gcc      864
Glu Pro Asn Pro His Ile Lys Tyr Gln Tyr Gly Gly Val Cys Val Ala
        275             280             285

agt tgt ccc cat aac ttt gtg gtg gat cag aca ttt tgt gtc agg gct      912
Ser Cys Pro His Asn Phe Val Val Asp Gln Thr Phe Cys Val Arg Ala
        290             295             300

tgt cct gct gac aag atg gaa gta gat aag aat gga ctc aag atg tgt      960
Cys Pro Ala Asp Lys Met Glu Val Asp Lys Asn Gly Leu Lys Met Cys
305             310             315             320
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- 65 -

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gag cct tgc aga ggg ctg tgc cca aaa gcc tgt gag ggg acg ggc tct    1008
Glu Pro Cys Arg Gly Leu Cys Pro Lys Ala Cys Glu Gly Thr Gly Ser
            325               330               335

gga agc cgc tac cag acc gtg gac tct agc aat atc gat ggg ttc gtg    1056
Gly Ser Arg Tyr Gln Thr Val Asp Ser Ser Asn Ile Asp Gly Phe Val
            340               345               350

aac tgt acc aag atc ctg ggc aac ctg gac ttc ctc atc act ggc ctc    1104
Asn Cys Thr Lys Ile Leu Gly Asn Leu Asp Phe Leu Ile Thr Gly Leu
            355               360               365

aat ggt gac ccc tgg cac aag atc cct gca ctg gac ccg gaa aag ctc    1152
Asn Gly Asp Pro Trp His Lys Ile Pro Ala Leu Asp Pro Glu Lys Leu
        370               375               380

aat gtt ttc agg aca gtc cgg gag att aca ggc tac cta aac atc cag    1200
Asn Val Phe Arg Thr Val Arg Glu Ile Thr Gly Tyr Leu Asn Ile Gln
385               390               395               400

tcc tgg ccc cct cac atg cac aac ttc agt gtt ttt tcc aac ctg acg    1248
Ser Trp Pro Pro His Met His Asn Phe Ser Val Phe Ser Asn Leu Thr
            405               410               415

acc atc ggg ggc aga agc ctc tac aat cgg ggc ttc tcc ttg ttg atc    1296
Thr Ile Gly Gly Arg Ser Leu Tyr Asn Arg Gly Phe Ser Leu Leu Ile
            420               425               430

atg aag aac ttg aat gtc acg tct ctg ggc ttc cgg tcc ctg aag gaa    1344
Met Lys Asn Leu Asn Val Thr Ser Leu Gly Phe Arg Ser Leu Lys Glu
            435               440               445

att agt gct ggg cgt gtc tac ata agt gcc aat cag caa ctt tgt tac    1392
Ile Ser Ala Gly Arg Val Tyr Ile Ser Ala Asn Gln Gln Leu Cys Tyr
        450               455               460

cac cac tct ctg aac tgg acc aga ctt ctg cgg ggg ccc gca gag gag    1440
His His Ser Leu Asn Trp Thr Arg Leu Leu Arg Gly Pro Ala Glu Glu
465               470               475               480

aga ctt gac atc aag tac aac cgg cct ctg gga gaa tgc gtg gca gag    1488
Arg Leu Asp Ile Lys Tyr Asn Arg Pro Leu Gly Glu Cys Val Ala Glu
            485               490               495

ggc aaa gtg tgt gat cca ctg tgc tcc tct ggg gga tgc tgg ggc cca    1536
Gly Lys Val Cys Asp Pro Leu Cys Ser Ser Gly Gly Cys Trp Gly Pro
            500               505               510

ggc cct ggt cag tgc ttg tct tgt cga aac tac agc cgg gaa ggt gtc    1584
Gly Pro Gly Gln Cys Leu Ser Cys Arg Asn Tyr Ser Arg Glu Gly Val
            515               520               525

tgt gtg act cac tgc aac gtt ctg caa ggg gaa ccc cga gag ttt gtt    1632
Cys Val Thr His Cys Asn Val Leu Gln Gly Glu Pro Arg Glu Phe Val
            530               535               540

cat gag gct cat tgc ttc tcc tgc cat cca gaa tgc cag ccc atg gag    1680
His Glu Ala His Cys Phe Ser Cys His Pro Glu Cys Gln Pro Met Glu
545               550               555               560

ggc acc agc acg tgc aat ggc tcg ggc tcc gac gct tgt gct cga tgc    1728
Gly Thr Ser Thr Cys Asn Gly Ser Gly Ser Asp Ala Cys Ala Arg Cys
            565               570               575

gcc cat ttt cgt gat ggg ccc cac tgt gtg aac agc tgc ccc cat gga    1776
Ala His Phe Arg Asp Gly Pro His Cys Val Asn Ser Cys Pro His Gly
            580               585               590
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```
atc cta ggt gcc aaa ggt cca atc tac aaa tat cca gat gct cag aat        1824
Ile Leu Gly Ala Lys Gly Pro Ile Tyr Lys Tyr Pro Asp Ala Gln Asn
            595             600             605

gag tgc cgg ccc tgc cac gag aac tgc acc caa ggg tgt aag gga cca        1872
Glu Cys Arg Pro Cys His Glu Asn Cys Thr Gln Gly Cys Lys Gly Pro
        610             615             620

gaa cta caa gac tgt tta ggc caa gca gag gta tta atg agc aaa cca        1920
Glu Leu Gln Asp Cys Leu Gly Gln Ala Glu Val Leu Met Ser Lys Pro
625             630             635             640

cac ctg gtc ata gcg gtg aca gta gga ctg act gtg atc ttc ctg att        1968
His Leu Val Ile Ala Val Thr Val Gly Leu Thr Val Ile Phe Leu Ile
                645             650             655

ctg gga ggc tct ttt ctc tat tgg cgt gga cgc agg att cag aat aaa        2016
Leu Gly Gly Ser Phe Leu Tyr Trp Arg Gly Arg Arg Ile Gln Asn Lys
                660             665             670

agg gct atg aga cgc tac ttg gag cgg ggt gag agc atc gag cct ctg        2064
Arg Ala Met Arg Arg Tyr Leu Glu Arg Gly Glu Ser Ile Glu Pro Leu
                675             680             685

gac cca agc gag aag gca aac aaa gtc ttg gct aga atc ttc aaa gag        2112
Asp Pro Ser Glu Lys Ala Asn Lys Val Leu Ala Arg Ile Phe Lys Glu
        690             695             700

aca gag ctg agg aaa ctt aag gtg ctt ggc tct ggt gtc ttt gga act        2160
Thr Glu Leu Arg Lys Leu Lys Val Leu Gly Ser Gly Val Phe Gly Thr
705             710             715             720

gta cac aag ggg att tgg att ccc gag ggt gaa tcc atc aag att cca        2208
Val His Lys Gly Ile Trp Ile Pro Glu Gly Glu Ser Ile Lys Ile Pro
                725             730             735

gtc tgc att aaa gtc atc gag gac aag agt ggg cgg cag agt ttt cag        2256
Val Cys Ile Lys Val Ile Glu Asp Lys Ser Gly Arg Gln Ser Phe Gln
                740             745             750

gct gtg act gat cac atg ctg gcc gtc ggc agc ctg gac cat gcc cac        2304
Ala Val Thr Asp His Met Leu Ala Val Gly Ser Leu Asp His Ala His
            755             760             765

att gta cgg ctg ctg gga ctg tgc cca ggg tca tct ctg cag ctt gtc        2352
Ile Val Arg Leu Leu Gly Leu Cys Pro Gly Ser Ser Leu Gln Leu Val
        770             775             780

act cag tac ttg cct ctg ggc tct ctc ctt gat cat gta aga cag cac        2400
Thr Gln Tyr Leu Pro Leu Gly Ser Leu Leu Asp His Val Arg Gln His
785             790             795             800

cgt gag aca ctg gga cca cag ctg ctg ctc aac tgg gga gta caa att        2448
Arg Glu Thr Leu Gly Pro Gln Leu Leu Leu Asn Trp Gly Val Gln Ile
            805             810             815

gcc aag ggt atg tat tac ctc gag gaa cac agc atg gtg cat agg gac        2496
Ala Lys Gly Met Tyr Tyr Leu Glu Glu His Ser Met Val His Arg Asp
            820             825             830

ctt gcg ctc cgg aat gtg atg ctt aag tca ccg agt caa gtc cag gtg        2544
Leu Ala Leu Arg Asn Val Met Leu Lys Ser Pro Ser Gln Val Gln Val
            835             840             845

gca gat ttt ggt gtg gct gac ttg ctg ccg cca gat gac aag cag tta        2592
Ala Asp Phe Gly Val Ala Asp Leu Leu Pro Pro Asp Asp Lys Gln Leu
            850             855             860
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```
cta cac agt gag gcc aag act cca att aaa tgg atg gcc ctt gag agt    2640
Leu His Ser Glu Ala Lys Thr Pro Ile Lys Trp Met Ala Leu Glu Ser
865                 870             875                 880

atc cac ttt ggg aaa tac aca cac cag agt gat gtc tgg agt tac ggt    2688
Ile His Phe Gly Lys Tyr Thr His Gln Ser Asp Val Trp Ser Tyr Gly
                885             890                 895

gta acc gtt tgg gag ttg atg acc ttc ggg gca gag ccc tac gca ggg    2736
Val Thr Val Trp Glu Leu Met Thr Phe Gly Ala Glu Pro Tyr Ala Gly
            900             905                 910

cta cga ctg gct gaa ata cca gac ctg ctg gag aag gga gag cgg tta    2784
Leu Arg Leu Ala Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu Arg Leu
            915             920             925

gca cag ccc cag atc tgc acc att gac gtc tac atg gtc atg gtc aag    2832
Ala Gln Pro Gln Ile Cys Thr Ile Asp Val Tyr Met Val Met Val Lys
            930             935             940

tgt tgg atg att gac gag aat att cgc cca acc ttt aaa gaa ctg gcc    2880
Cys Trp Met Ile Asp Glu Asn Ile Arg Pro Thr Phe Lys Glu Leu Ala
945                 950             955                 960

aat gag ttt acc agg atg gcc cgg gac cca cca agg tat ctg gtc atc    2928
Asn Glu Phe Thr Arg Met Ala Arg Asp Pro Pro Arg Tyr Leu Val Ile
                965             970             975

aag aga gcg agt ggg cct gga ata cct cct gca gca gag cca tct gct    2976
Lys Arg Ala Ser Gly Pro Gly Ile Pro Pro Ala Ala Glu Pro Ser Ala
                980             985             990

ctg agc acc aaa gag ttg cag gat  gca gag ctg gag cca  gac ctg gac   3024
Leu Ser Thr Lys Glu Leu Gln Asp  Ala Glu Leu Glu Pro  Asp Leu Asp
            995             1000            1005

ctc gac  cta gac gtg gag gta  gaa gag gag ggc ctg  gcg acc aca       3069
Leu Asp  Leu Asp Val Glu Val  Glu Glu Glu Gly Leu  Ala Thr Thr
    1010            1015                    1020

ctg ggt  tct gcc ctc agc ttg  cct aca gga acg ctt  acc cgg cca       3114
Leu Gly  Ser Ala Leu Ser Leu  Pro Thr Gly Thr Leu  Thr Arg Pro
    1025            1030                    1035

cgt ggg  agc cag agt ctt tta  agt cct tcg tct gga  tac atg ccc       3159
Arg Gly  Ser Gln Ser Leu Leu  Ser Pro Ser Ser Gly  Tyr Met Pro
    1040            1045                    1050

atg aac  cag agc aac ctt ggg  gag gct tgt ctg gat  tct gcg gtt       3204
Met Asn  Gln Ser Asn Leu Gly  Glu Ala Cys Leu Asp  Ser Ala Val
    1055            1060                    1065

ttg ggg  ggt cgc gaa cag ttc  tcc cgt ccc atc tct  ctg cac ccg       3249
Leu Gly  Gly Arg Glu Gln Phe  Ser Arg Pro Ile Ser  Leu His Pro
    1070            1075                    1080

atc cca  cgg ggg cgt caa acg  tca gag tca tca gag  ggc cat gtg       3294
Ile Pro  Arg Gly Arg Gln Thr  Ser Glu Ser Ser Glu  Gly His Val
    1085            1090                    1095

acg ggc  tct gag gct gaa ctc  caa gag aga gta tca  atg tgt agg       3339
Thr Gly  Ser Glu Ala Glu Leu  Gln Glu Arg Val Ser  Met Cys Arg
    1100            1105                    1110

agc cgg  agc cgg agc cgg agc  cca cgg cca cgt ggg  gac agt gcc       3384
Ser Arg  Ser Arg Ser Arg Ser  Pro Arg Pro Arg Gly  Asp Ser Ala
    1115            1120                    1125
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tac cat  tcg cag cga cac agc  ctg ctt act ccc gtc  acc ccg ctc      3429
Tyr His  Ser Gln Arg His Ser  Leu Leu Thr Pro Val  Thr Pro Leu
    1130                1135                1140

tcc cca  cca ggg tta gag gaa  gag gat ggc aat ggt  tat gtc atg      3474
Ser Pro  Pro Gly Leu Glu Glu  Glu Asp Gly Asn Gly  Tyr Val Met
    1145                1150                1155

cca gat  acg cac ctc aga ggt  aca tcc tct tcc cgg  gaa ggc acc      3519
Pro Asp  Thr His Leu Arg Gly  Thr Ser Ser Ser Arg  Glu Gly Thr
    1160                1165                1170

ctt tcg  tca gta ggt ctc agt  tct gtg ctg ggt acc  gaa gag gaa      3564
Leu Ser  Ser Val Gly Leu Ser  Ser Val Leu Gly Thr  Glu Glu Glu
    1175                1180                1185

gat gaa  gat gag gag tat gaa  tac atg aac cgg aag  agg agg ggt      3609
Asp Glu  Asp Glu Glu Tyr Glu  Tyr Met Asn Arg Lys  Arg Arg Gly
    1190                1195                1200

agc ccg  gct cgg ccc ccc aga  cct ggt tcc ctg gaa  gag ctg ggc      3654
Ser Pro  Ala Arg Pro Pro Arg  Pro Gly Ser Leu Glu  Glu Leu Gly
    1205                1210                1215

tat gag  tac atg gat gtg ggt  tca gac ctc agt gct  tct ctg ggc      3699
Tyr Glu  Tyr Met Asp Val Gly  Ser Asp Leu Ser Ala  Ser Leu Gly
    1220                1225                1230

agt acg  cag agt tgc cca ctc  cat ccc atg gcc atc  gtg ccc tct      3744
Ser Thr  Gln Ser Cys Pro Leu  His Pro Met Ala Ile  Val Pro Ser
    1235                1240                1245

gct ggc  acg act cca gat gag  gac tat gaa tac atg  aac cgc agg      3789
Ala Gly  Thr Thr Pro Asp Glu  Asp Tyr Glu Tyr Met  Asn Arg Arg
    1250                1255                1260

cgt ggt  gcg ggc ggt tcc gga  ggg gat tat gca gct  atg ggg gcc      3834
Arg Gly  Ala Gly Gly Ser Gly  Gly Asp Tyr Ala Ala  Met Gly Ala
    1265                1270                1275

tgc cca  gca gct gaa caa ggg  tat gag gaa atg cga  gct ttc cag      3879
Cys Pro  Ala Ala Glu Gln Gly  Tyr Glu Glu Met Arg  Ala Phe Gln
    1280                1285                1290

ggg cct  gga cat caa gcc ccc  cat gtt cgt tat gcc  cgc ctc aaa      3924
Gly Pro  Gly His Gln Ala Pro  His Val Arg Tyr Ala  Arg Leu Lys
    1295                1300                1305

act ctg  cgt agt tta gaa gcc  act gac tcc gcc ttt  gac aac ccc      3969
Thr Leu  Arg Ser Leu Glu Ala  Thr Asp Ser Ala Phe  Asp Asn Pro
    1310                1315                1320

gat tac  tgg cat agc agg ctt  ttc cct aag gct aac  gcc cag aga      4014
Asp Tyr  Trp His Ser Arg Leu  Phe Pro Lys Ala Asn  Ala Gln Arg
    1325                1330                1335

att tga                                                             4020
Ile
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<210>  17
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<213>  Mus musculus

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1               5                   10                  15

Ala Arg Gly Ser Glu Met Gly Asn Ser Gln Ala Val Cys Pro Gly Thr
            20                  25                  30

Leu Asn Gly Leu Ser Val Thr Gly Asp Ala Asp Asn Gln Tyr Gln Thr
            35                  40                  45

Leu Tyr Lys Leu Tyr Glu Lys Cys Glu Val Val Met Gly Asn Leu Glu
        50                  55                  60

Ile Val Leu Thr Gly His Asn Ala Asp Leu Ser Phe Leu Gln Trp Ile
65                  70                  75                  80

Arg Glu Val Thr Gly Tyr Val Leu Val Ala Met Asn Glu Phe Ser Val
                85                  90                  95

Leu Pro Leu Pro Asn Leu Arg Val Val Arg Gly Thr Gln Val Tyr Asp
            100                 105                 110

Gly Lys Phe Ala Ile Phe Val Met Leu Asn Tyr Asn Thr Asn Ser Ser
        115                 120                 125

His Ala Leu Arg Gln Leu Arg Phe Thr Gln Leu Thr Glu Ile Leu Leu
        130                 135                 140

Gly Gly Val Tyr Ile Glu Lys Asn Asp Lys Leu Cys His Met Asp Thr
145                 150                 155                 160

Ile Asp Trp Arg Asp Ile Val Arg Val Pro Asp Ala Glu Ile Val Val
            165                 170                 175

Lys Asn Asn Gly Gly Asn Cys Pro Pro Cys His Glu Val Cys Lys Gly
            180                 185                 190

Arg Cys Trp Gly Pro Gly Pro Glu Asp Cys Gln Ile Leu Thr Lys Thr
        195                 200                 205

Ile Cys Ala Pro Gln Cys Asn Gly Arg Cys Phe Gly Pro Asn Pro Asn
    210                 215                 220

Gln Cys Cys His Asp Glu Cys Ala Gly Gly Cys Ser Gly Pro Gln Asp
225                 230                 235                 240

Thr Asp Cys Phe Ala Cys Arg His Phe Asn Asp Ser Gly Ala Cys Val
            245                 250                 255

Pro Arg Cys Pro Ala Pro Leu Val Tyr Asn Lys Leu Thr Phe Gln Leu
        260                 265                 270
```

Glu Pro Asn Pro His Ile Lys Tyr Gln Tyr Gly Gly Val Cys Val Ala
    275   280   285

Ser Cys Pro His Asn Phe Val Val Asp Gln Thr Phe Cys Val Arg Ala
    290   295   300

Cys Pro Ala Asp Lys Met Glu Val Asp Lys Asn Gly Leu Lys Met Cys
305   310   315   320

Glu Pro Cys Arg Gly Leu Cys Pro Lys Ala Cys Glu Gly Thr Gly Ser
            325   330   335

Gly Ser Arg Tyr Gln Thr Val Asp Ser Ser Asn Ile Asp Gly Phe Val
            340   345   350

Asn Cys Thr Lys Ile Leu Gly Asn Leu Asp Phe Leu Ile Thr Gly Leu
    355   360   365

Asn Gly Asp Pro Trp His Lys Ile Pro Ala Leu Asp Pro Glu Lys Leu
    370   375   380

Asn Val Phe Arg Thr Val Arg Glu Ile Thr Gly Tyr Leu Asn Ile Gln
385   390   395   400

Ser Trp Pro Pro His Met His Asn Phe Ser Val Phe Ser Asn Leu Thr
            405   410   415

Thr Ile Gly Gly Arg Ser Leu Tyr Asn Arg Gly Phe Ser Leu Leu Ile
            420   425   430

Met Lys Asn Leu Asn Val Thr Ser Leu Gly Phe Arg Ser Leu Lys Glu
    435   440   445

Ile Ser Ala Gly Arg Val Tyr Ile Ser Ala Asn Gln Gln Leu Cys Tyr
    450   455   460

His His Ser Leu Asn Trp Thr Arg Leu Leu Arg Gly Pro Ala Glu Glu
465   470   475   480

Arg Leu Asp Ile Lys Tyr Asn Arg Pro Leu Gly Glu Cys Val Ala Glu
            485   490   495

Gly Lys Val Cys Asp Pro Leu Cys Ser Ser Gly Gly Cys Trp Gly Pro
            500   505   510

Gly Pro Gly Gln Cys Leu Ser Cys Arg Asn Tyr Ser Arg Glu Gly Val
            515   520   525

Cys Val Thr His Cys Asn Val Leu Gln Gly Glu Pro Arg Glu Phe Val
    530   535   540

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His Glu Ala His Cys Phe Ser Cys His Pro Glu Cys Gln Pro Met Glu
545                 550                 555                 560


Gly Thr Ser Thr Cys Asn Gly Ser Gly Ser Asp Ala Cys Ala Arg Cys
                565                 570                 575


Ala His Phe Arg Asp Gly Pro His Cys Val Asn Ser Cys Pro His Gly
            580                 585                 590


Ile Leu Gly Ala Lys Gly Pro Ile Tyr Lys Tyr Pro Asp Ala Gln Asn
            595                 600                 605


Glu Cys Arg Pro Cys His Glu Asn Cys Thr Gln Gly Cys Lys Gly Pro
    610                 615                 620


Glu Leu Gln Asp Cys Leu Gly Gln Ala Glu Val Leu Met Ser Lys Pro
625                 630                 635                 640


His Leu Val Ile Ala Val Thr Val Gly Leu Thr Val Ile Phe Leu Ile
                645                 650                 655


Leu Gly Gly Ser Phe Leu Tyr Trp Arg Gly Arg Arg Ile Gln Asn Lys
            660                 665                 670


Arg Ala Met Arg Arg Tyr Leu Glu Arg Gly Glu Ser Ile Glu Pro Leu
        675                 680                 685


Asp Pro Ser Glu Lys Ala Asn Lys Val Leu Ala Arg Ile Phe Lys Glu
    690                 695                 700


Thr Glu Leu Arg Lys Leu Lys Val Leu Gly Ser Gly Val Phe Gly Thr
705                 710                 715                 720


Val His Lys Gly Ile Trp Ile Pro Glu Gly Glu Ser Ile Lys Ile Pro
                725                 730                 735


Val Cys Ile Lys Val Ile Glu Asp Lys Ser Gly Arg Gln Ser Phe Gln
            740                 745                 750


Ala Val Thr Asp His Met Leu Ala Val Gly Ser Leu Asp His Ala His
        755                 760                 765


Ile Val Arg Leu Leu Gly Leu Cys Pro Gly Ser Ser Leu Gln Leu Val
    770                 775                 780


Thr Gln Tyr Leu Pro Leu Gly Ser Leu Leu Asp His Val Arg Gln His
785                 790                 795                 800


Arg Glu Thr Leu Gly Pro Gln Leu Leu Leu Asn Trp Gly Val Gln Ile
                805                 810                 815
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Ala Lys Gly Met Tyr Tyr Leu Glu Glu His Ser Met Val His Arg Asp
          820   825   830

Leu Ala Leu Arg Asn Val Met Leu Lys Ser Pro Ser Gln Val Gln Val
          835   840   845

Ala Asp Phe Gly Val Ala Asp Leu Leu Pro Pro Asp Asp Lys Gln Leu
    850   855   860

Leu His Ser Glu Ala Lys Thr Pro Ile Lys Trp Met Ala Leu Glu Ser
865   870   875   880

Ile His Phe Gly Lys Tyr Thr His Gln Ser Asp Val Trp Ser Tyr Gly
              885   890   895

Val Thr Val Trp Glu Leu Met Thr Phe Gly Ala Glu Pro Tyr Ala Gly
          900   905   910

Leu Arg Leu Ala Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu Arg Leu
          915   920   925

Ala Gln Pro Gln Ile Cys Thr Ile Asp Val Tyr Met Val Met Val Lys
    930   935   940

Cys Trp Met Ile Asp Glu Asn Ile Arg Pro Thr Phe Lys Glu Leu Ala
945   950   955   960

Asn Glu Phe Thr Arg Met Ala Arg Asp Pro Pro Arg Tyr Leu Val Ile
              965   970   975

Lys Arg Ala Ser Gly Pro Gly Ile Pro Pro Ala Ala Glu Pro Ser Ala
          980   985   990

Leu Ser Thr Lys Glu Leu Gln Asp Ala Glu Leu Glu Pro Asp Leu Asp
          995   1000   1005

Leu Asp Leu Asp Val Glu Val Glu Glu Glu Gly Leu Ala Thr Thr
    1010   1015   1020

Leu Gly Ser Ala Leu Ser Leu Pro Thr Gly Thr Leu Thr Arg Pro
    1025   1030   1035

Arg Gly Ser Gln Ser Leu Leu Ser Pro Ser Ser Gly Tyr Met Pro
    1040   1045   1050

Met Asn Gln Ser Asn Leu Gly Glu Ala Cys Leu Asp Ser Ala Val
    1055   1060   1065

Leu Gly Gly Arg Glu Gln Phe Ser Arg Pro Ile Ser Leu His Pro
    1070   1075   1080

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```
Ile Pro  Arg Gly Arg Gln Thr  Ser Glu Ser Ser Glu  Gly His Val
    1085              1090              1095

Thr Gly  Ser Glu Ala Glu Leu  Gln Glu Arg Val Ser  Met Cys Arg
    1100              1105              1110

Ser Arg  Ser Arg Ser Arg Ser  Pro Arg Pro Arg Gly  Asp Ser Ala
    1115              1120              1125

Tyr His  Ser Gln Arg His Ser  Leu Leu Thr Pro Val  Thr Pro Leu
    1130              1135              1140

Ser Pro  Pro Gly Leu Glu Glu  Glu Asp Gly Asn Gly  Tyr Val Met
    1145              1150              1155

Pro Asp  Thr His Leu Arg Gly  Thr Ser Ser Ser Arg  Glu Gly Thr
    1160              1165              1170

Leu Ser  Ser Val Gly Leu Ser  Ser Val Leu Gly Thr  Glu Glu Glu
    1175              1180              1185

Asp Glu  Asp Glu Glu Tyr Glu  Tyr Met Asn Arg Lys  Arg Arg Gly
    1190              1195              1200

Ser Pro  Ala Arg Pro Pro Arg  Pro Gly Ser Leu Glu  Glu Leu Gly
    1205              1210              1215

Tyr Glu  Tyr Met Asp Val Gly  Ser Asp Leu Ser Ala  Ser Leu Gly
    1220              1225              1230

Ser Thr  Gln Ser Cys Pro Leu  His Pro Met Ala Ile  Val Pro Ser
    1235              1240              1245

Ala Gly  Thr Thr Pro Asp Glu  Asp Tyr Glu Tyr Met  Asn Arg Arg
    1250              1255              1260

Arg Gly  Ala Gly Gly Ser Gly  Gly Asp Tyr Ala Ala  Met Gly Ala
    1265              1270              1275

Cys Pro  Ala Ala Glu Gln Gly  Tyr Glu Glu Met Arg  Ala Phe Gln
    1280              1285              1290

Gly Pro  Gly His Gln Ala Pro  His Val Arg Tyr Ala  Arg Leu Lys
    1295              1300              1305

Thr Leu  Arg Ser Leu Glu Ala  Thr Asp Ser Ala Phe  Asp Asn Pro
    1310              1315              1320

Asp Tyr  Trp His Ser Arg Leu  Phe Pro Lys Ala Asn  Ala Gln Arg
    1325              1330              1335
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Ile

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<211> 5484
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                                       1               5

tgg gtc tgg gtg agc ctt ctc gtg gcg gcg ggg acc gtc cag ccc agc          102
Trp Val Trp Val Ser Leu Leu Val Ala Ala Gly Thr Val Gln Pro Ser
        10              15                  20

gat tct cag tca gtg tgt gca gga acg gag aat aaa ctg agc tct ctc          150
Asp Ser Gln Ser Val Cys Ala Gly Thr Glu Asn Lys Leu Ser Ser Leu
    25                  30                  35

tct gac ctg gaa cag cag tac cga gcc ttg cgc aag tac tat gaa aac          198
Ser Asp Leu Glu Gln Gln Tyr Arg Ala Leu Arg Lys Tyr Tyr Glu Asn
40                  45                  50                  55

tgt gag gtt gtc atg ggc aac ctg gag ata acc agc att gag cac aac          246
Cys Glu Val Val Met Gly Asn Leu Glu Ile Thr Ser Ile Glu His Asn
                60                  65                  70

cgg gac ctc tcc ttc ctg cgg tct gtt cga gaa gtc aca ggc tac gtg          294
Arg Asp Leu Ser Phe Leu Arg Ser Val Arg Glu Val Thr Gly Tyr Val
                75                  80                  85

tta gtg gct ctt aat cag ttt cgt tac ctg cct ctg gag aat tta cgc          342
Leu Val Ala Leu Asn Gln Phe Arg Tyr Leu Pro Leu Glu Asn Leu Arg
            90                  95                  100

att att cgt ggg aca aaa ctt tat gag gat cga tat gcc ttg gca ata          390
Ile Ile Arg Gly Thr Lys Leu Tyr Glu Asp Arg Tyr Ala Leu Ala Ile
        105                 110                 115

ttt tta aac tac aga aaa gat gga aac ttt gga ctt caa gaa ctt gga          438
Phe Leu Asn Tyr Arg Lys Asp Gly Asn Phe Gly Leu Gln Glu Leu Gly
120                 125                 130                 135

tta aag aac ttg aca gaa atc cta aat ggt gga gtc tat gta gac cag          486
Leu Lys Asn Leu Thr Glu Ile Leu Asn Gly Gly Val Tyr Val Asp Gln
                140                 145                 150

aac aaa ttc ctt tgt tat gca gac acc att cat tgg caa gat att gtt          534
Asn Lys Phe Leu Cys Tyr Ala Asp Thr Ile His Trp Gln Asp Ile Val
            155                 160                 165

cgg aac cca tgg cct tcc aac ttg act ctt gtg tca aca aat ggt agt          582
Arg Asn Pro Trp Pro Ser Asn Leu Thr Leu Val Ser Thr Asn Gly Ser
        170                 175                 180

tca gga tgt gga cgt tgc cat aag tcc tgt act ggc cgt tgc tgg gga          630
Ser Gly Cys Gly Arg Cys His Lys Ser Cys Thr Gly Arg Cys Trp Gly
    185                 190                 195
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ccc aca gaa aat cat tgc cag act ttg aca agg acg gtg tgt gca gaa     678
Pro Thr Glu Asn His Cys Gln Thr Leu Thr Arg Thr Val Cys Ala Glu
200              205             210                 215


caa tgt gac ggc aga tgc tac gga cct tac gtc agt gac tgc tgc cat     726
Gln Cys Asp Gly Arg Cys Tyr Gly Pro Tyr Val Ser Asp Cys Cys His
             220             225                 230


cga gaa tgt gct gga ggc tgc tca gga cct aag gac aca gac tgc ttt     774
Arg Glu Cys Ala Gly Gly Cys Ser Gly Pro Lys Asp Thr Asp Cys Phe
             235             240                 245


gcc tgc atg aat ttc aat gac agt gga gca tgt gtt act cag tgt ccc     822
Ala Cys Met Asn Phe Asn Asp Ser Gly Ala Cys Val Thr Gln Cys Pro
         250             255             260


caa acc ttt gtc tac aat cca acc acc ttt caa ctg gag cac aat ttc     870
Gln Thr Phe Val Tyr Asn Pro Thr Thr Phe Gln Leu Glu His Asn Phe
         265             270             275


aat gca aag tac aca tat gga gca ttc tgt gtc aag aaa tgt cca cat     918
Asn Ala Lys Tyr Thr Tyr Gly Ala Phe Cys Val Lys Lys Cys Pro His
280             285             290                 295


aac ttt gtg gta gat tcc agt tct tgt gtg cgt gcc tgc cct agt tcc     966
Asn Phe Val Val Asp Ser Ser Ser Cys Val Arg Ala Cys Pro Ser Ser
             300             305             310


aag atg gaa gta gaa gaa aat ggg att aaa atg tgt aaa cct tgc act    1014
Lys Met Glu Val Glu Glu Asn Gly Ile Lys Met Cys Lys Pro Cys Thr
             315             320             325


gac att tgc cca aaa gct tgt gat ggc att ggc aca gga tca ttg atg    1062
Asp Ile Cys Pro Lys Ala Cys Asp Gly Ile Gly Thr Gly Ser Leu Met
         330             335             340


tca gct cag act gtg gat tcc agt aac att gac aaa ttc ata aac tgt    1110
Ser Ala Gln Thr Val Asp Ser Ser Asn Ile Asp Lys Phe Ile Asn Cys
         345             350             355


acc aag atc aat ggg aat ttg atc ttt cta gtc act ggt att cat ggg    1158
Thr Lys Ile Asn Gly Asn Leu Ile Phe Leu Val Thr Gly Ile His Gly
360             365             370                 375


gac cct tac aat gca att gaa gcc ata gac cca gag aaa ctg aac gtc    1206
Asp Pro Tyr Asn Ala Ile Glu Ala Ile Asp Pro Glu Lys Leu Asn Val
             380             385             390


ttt cgg aca gtc aga gag ata aca ggt ttc ctg aac ata cag tca tgg    1254
Phe Arg Thr Val Arg Glu Ile Thr Gly Phe Leu Asn Ile Gln Ser Trp
             395             400             405


cca cca aac atg act gac ttc agt gtt ttt tct aac ctg gtg acc att    1302
Pro Pro Asn Met Thr Asp Phe Ser Val Phe Ser Asn Leu Val Thr Ile
             410             415             420


ggt gga aga gta ctc tat agt ggc ctg tcc ttg ctt atc ctc aag caa    1350
Gly Gly Arg Val Leu Tyr Ser Gly Leu Ser Leu Leu Ile Leu Lys Gln
         425             430             435


cag ggc atc acc tct cta cag ttc cag tcc ctg aag gaa atc agc gca    1398
Gln Gly Ile Thr Ser Leu Gln Phe Gln Ser Leu Lys Glu Ile Ser Ala
440             445             450                 455


gga aac atc tat att act gac aac agc aac ctg tgt tat tat cat acc    1446
Gly Asn Ile Tyr Ile Thr Asp Asn Ser Asn Leu Cys Tyr Tyr His Thr
             460             465             470
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att aac tgg aca aca ctc ttc agc aca atc aac cag aga ata gta atc   1494
Ile Asn Trp Thr Thr Leu Phe Ser Thr Ile Asn Gln Arg Ile Val Ile
            475                 480                 485

cgg gac aac aga aaa gct gaa aat tgt act gct gaa gga atg gtg tgc   1542
Arg Asp Asn Arg Lys Ala Glu Asn Cys Thr Ala Glu Gly Met Val Cys
            490                 495                 500

aac cat ctg tgt tcc agt gat ggc tgt tgg gga cct ggg cca gac caa   1590
Asn His Leu Cys Ser Ser Asp Gly Cys Trp Gly Pro Gly Pro Asp Gln
    505                 510                 515

tgt ctg tcg tgt cgc cgc ttc agt aga gga agg atc tgc ata gag tct   1638
Cys Leu Ser Cys Arg Arg Phe Ser Arg Gly Arg Ile Cys Ile Glu Ser
520                 525                 530                 535

tgt aac ctc tat gat ggt gaa ttt cgg gag ttt gag aat ggc tcc atc   1686
Cys Asn Leu Tyr Asp Gly Glu Phe Arg Glu Phe Glu Asn Gly Ser Ile
                540                 545                 550

tgt gtg gag tgt gac ccc cag tgt gag aag atg gaa gat ggc ctc ctc   1734
Cys Val Glu Cys Asp Pro Gln Cys Glu Lys Met Glu Asp Gly Leu Leu
                555                 560                 565

aca tgc cat gga ccg ggt cct gac aac tgt aca aag tgc tct cat ttt   1782
Thr Cys His Gly Pro Gly Pro Asp Asn Cys Thr Lys Cys Ser His Phe
            570                 575                 580

aaa gat ggc cca aac tgt gtg gaa aaa tgt cca gat ggc tta cag ggg   1830
Lys Asp Gly Pro Asn Cys Val Glu Lys Cys Pro Asp Gly Leu Gln Gly
    585                 590                 595

gca aac agt ttc att ttc aag tat gct gat cca gat cgg gag tgc cac   1878
Ala Asn Ser Phe Ile Phe Lys Tyr Ala Asp Pro Asp Arg Glu Cys His
600                 605                 610                 615

cca tgc cat cca aac tgc acc caa ggg tgt aac ggt ccc act agt cat   1926
Pro Cys His Pro Asn Cys Thr Gln Gly Cys Asn Gly Pro Thr Ser His
                620                 625                 630

gac tgc att tac tac cca tgg acg ggc cat tcc act tta cca caa cat   1974
Asp Cys Ile Tyr Tyr Pro Trp Thr Gly His Ser Thr Leu Pro Gln His
                635                 640                 645

gct aga act ccc ctg att gca gct gga gta att ggt ggg ctc ttc att   2022
Ala Arg Thr Pro Leu Ile Ala Ala Gly Val Ile Gly Gly Leu Phe Ile
            650                 655                 660

ctg gtc att gtg ggt ctg aca ttt gct gtt tat gtt aga agg aag agc   2070
Leu Val Ile Val Gly Leu Thr Phe Ala Val Tyr Val Arg Arg Lys Ser
    665                 670                 675

atc aaa aag aaa aga gcc ttg aga aga ttc ttg gaa aca gag ttg gtg   2118
Ile Lys Lys Lys Arg Ala Leu Arg Arg Phe Leu Glu Thr Glu Leu Val
680                 685                 690                 695

gaa cca tta act ccc agt ggc aca gca ccc aat caa gct caa ctt cgt   2166
Glu Pro Leu Thr Pro Ser Gly Thr Ala Pro Asn Gln Ala Gln Leu Arg
                700                 705                 710

att ttg aaa gaa act gag ctg aag agg gta aaa gtc ctt ggc tca ggt   2214
Ile Leu Lys Glu Thr Glu Leu Lys Arg Val Lys Val Leu Gly Ser Gly
                715                 720                 725

gct ttt gga acg gtt tat aaa ggt att tgg gta cct gaa gga gaa act   2262
Ala Phe Gly Thr Val Tyr Lys Gly Ile Trp Val Pro Glu Gly Glu Thr
            730                 735                 740
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gtg aag att cct gtg gct att aag att ctt aat gag aca act ggt ccc     2310
Val Lys Ile Pro Val Ala Ile Lys Ile Leu Asn Glu Thr Thr Gly Pro
    745             750             755

aag gca aat gtg gag ttc atg gat gaa gct ctg atc atg gca agt atg     2358
Lys Ala Asn Val Glu Phe Met Asp Glu Ala Leu Ile Met Ala Ser Met
760             765             770             775
gat cat cca cac cta gtc cgg ttg ctg ggt gtg tgt ctg agc cca acc     2406
Asp His Pro His Leu Val Arg Leu Leu Gly Val Cys Leu Ser Pro Thr
            780             785             790

atc cag ctg gtt act caa ctt atg ccc cat ggc tgc ctg ttg gag tat     2454
Ile Gln Leu Val Thr Gln Leu Met Pro His Gly Cys Leu Leu Glu Tyr
            795             800             805

gtc cac gag cac aag gat aac att gga tca caa ctg ctg ctt aac tgg     2502
Val His Glu His Lys Asp Asn Ile Gly Ser Gln Leu Leu Leu Asn Trp
        810             815             820

tgt gtc cag ata gct aag gga atg atg tac ctg gaa gaa aga cga ctc     2550
Cys Val Gln Ile Ala Lys Gly Met Met Tyr Leu Glu Glu Arg Arg Leu
        825             830             835

gtt cat cgg gat ttg gca gcc cgt aat gtc tta gtg aaa tct cca aac     2598
Val His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys Ser Pro Asn
840             845             850             855

cat gtg aaa atc aca gat ttt ggg cta gcc aga ctc ttg gaa gga gat     2646
His Val Lys Ile Thr Asp Phe Gly Leu Ala Arg Leu Leu Glu Gly Asp
            860             865             870

gaa aaa gag tac aat gct gat gga gga aag atg cca att aaa tgg atg     2694
Glu Lys Glu Tyr Asn Ala Asp Gly Gly Lys Met Pro Ile Lys Trp Met
            875             880             885

gct ctg gag tgt ata cat tac agg aaa ttc acc cat cag agt gac gtt     2742
Ala Leu Glu Cys Ile His Tyr Arg Lys Phe Thr His Gln Ser Asp Val
            890             895             900

tgg agc tat gga gtt act ata tgg gaa ctg atg acc ttt gga gga aaa     2790
Trp Ser Tyr Gly Val Thr Ile Trp Glu Leu Met Thr Phe Gly Gly Lys
    905             910             915

ccc tat gat gga att cca acg cga gaa atc cct gat tta tta gag aaa     2838
Pro Tyr Asp Gly Ile Pro Thr Arg Glu Ile Pro Asp Leu Leu Glu Lys
920             925             930             935

gga gaa cgt ttg cct cag cct ccc atc tgc act att gac gtt tac atg     2886
Gly Glu Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val Tyr Met
            940             945             950

gtc atg gtc aaa tgt tgg atg att gat gct gac agt aga cct aaa ttt     2934
Val Met Val Lys Cys Trp Met Ile Asp Ala Asp Ser Arg Pro Lys Phe
            955             960             965

aag gaa ctg gct gct gag ttt tca agg atg gct cga gac cct caa aga     2982
Lys Glu Leu Ala Ala Glu Phe Ser Arg Met Ala Arg Asp Pro Gln Arg
            970             975             980

tac cta gtt att cag ggt gat gat cgt atg aag ctt ccc agt cca aat     3030
Tyr Leu Val Ile Gln Gly Asp Asp Arg Met Lys Leu Pro Ser Pro Asn
            985             990             995

gac agc aag ttc ttt cag aat ctc ttg gat gaa gag gat ttg gaa     3075
Asp Ser Lys Phe Phe Gln Asn Leu Leu Asp Glu Glu Asp Leu Glu
1000            1005            1010
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gat  atg  atg  gat  gct  gag   gag  tac  ttg  gtc  cct   cag  gct  ttc  aac         3120
Asp  Met  Met  Asp  Ala  Glu   Glu  Tyr  Leu  Val  Pro   Gln  Ala  Phe  Asn
1015                      1020                 1025

atc  cca  cct  ccc  atc  tat   act  tcc  aga  gca  aga   att  gac  tcg  aat         3165
Ile  Pro  Pro  Pro  Ile  Tyr   Thr  Ser  Arg  Ala  Arg   Ile  Asp  Ser  Asn
1030                      1035                 1040

agg  agt  gaa  att  gga  cac   agc  cct  cct  cct  gcc   tac  acc  ccc  atg         3210
Arg  Ser  Glu  Ile  Gly  His   Ser  Pro  Pro  Pro  Ala   Tyr  Thr  Pro  Met
1045                      1050                 1055

tca  gga  aac  cag  ttt  gta   tac  cga  gat  gga  ggt   ttt  gct  gct  gaa         3255
Ser  Gly  Asn  Gln  Phe  Val   Tyr  Arg  Asp  Gly  Gly   Phe  Ala  Ala  Glu
1060                      1065                 1070

caa  gga  gtg  tct  gtg  ccc   tac  aga  gcc  cca  act   agc  aca  att  cca         3300
Gln  Gly  Val  Ser  Val  Pro   Tyr  Arg  Ala  Pro  Thr   Ser  Thr  Ile  Pro
1075                      1080                 1085

gaa  gct  cct  gtg  gca  cag   ggt  gct  act  gct  gag   att  ttt  gat  gac         3345
Glu  Ala  Pro  Val  Ala  Gln   Gly  Ala  Thr  Ala  Glu   Ile  Phe  Asp  Asp
1090                      1095                 1100

tcc  tgc  tgt  aat  ggc  acc   cta  cgc  aag  cca  gtg   gca  ccc  cat  gtc         3390
Ser  Cys  Cys  Asn  Gly  Thr   Leu  Arg  Lys  Pro  Val   Ala  Pro  His  Val
1105                      1110                 1115

caa  gag  gac  agt  agc  acc   cag  agg  tac  agt  gct   gac  ccc  acc  gtg         3435
Gln  Glu  Asp  Ser  Ser  Thr   Gln  Arg  Tyr  Ser  Ala   Asp  Pro  Thr  Val
1120                      1125                 1130

ttt  gcc  cca  gaa  cgg  agc   cca  cga  gga  gag  ctg   gat  gag  gaa  ggt         3480
Phe  Ala  Pro  Glu  Arg  Ser   Pro  Arg  Gly  Glu  Leu   Asp  Glu  Glu  Gly
1135                      1140                 1145

tac  atg  act  cct  atg  cga   gac  aaa  ccc  aaa  caa   gaa  tac  ctg  aat         3525
Tyr  Met  Thr  Pro  Met  Arg   Asp  Lys  Pro  Lys  Gln   Glu  Tyr  Leu  Asn
1150                      1155                 1160

cca  gtg  gag  gag  aac  cct   ttt  gtt  tct  cgg  aga   aaa  aat  gga  gac         3570
Pro  Val  Glu  Glu  Asn  Pro   Phe  Val  Ser  Arg  Arg   Lys  Asn  Gly  Asp
1165                      1170                 1175

ctt  caa  gca  ttg  gat  aat   ccc  gaa  tat  cac  aat   gca  tcc  aat  ggt         3615
Leu  Gln  Ala  Leu  Asp  Asn   Pro  Glu  Tyr  His  Asn   Ala  Ser  Asn  Gly
1180                      1185                 1190

cca  ccc  aag  gcc  gag  gat   gag  tat  gtg  aat  gag   cca  ctg  tac  ctc         3660
Pro  Pro  Lys  Ala  Glu  Asp   Glu  Tyr  Val  Asn  Glu   Pro  Leu  Tyr  Leu
1195                      1200                 1205

aac  acc  ttt  gcc  aac  acc   ttg  gga  aaa  gct  gag   tac  ctg  aag  aac         3705
Asn  Thr  Phe  Ala  Asn  Thr   Leu  Gly  Lys  Ala  Glu   Tyr  Leu  Lys  Asn
1210                      1215                 1220

aac  ata  ctg  tca  atg  cca   gag  aag  gcc  aag  aaa   gcg  ttt  gac  aac         3750
Asn  Ile  Leu  Ser  Met  Pro   Glu  Lys  Ala  Lys  Lys   Ala  Phe  Asp  Asn
1225                      1230                 1235

cct  gac  tac  tgg  aac  cac   agc  ctg  cca  cct  cgg   agc  acc  ctt  cag         3795
Pro  Asp  Tyr  Trp  Asn  His   Ser  Leu  Pro  Pro  Arg   Ser  Thr  Leu  Gln
1240                      1245                 1250

cac  cca  gac  tac  ctg  cag   gag  tac  agc  aca  aaa   tat  ttt  tat  aaa         3840
His  Pro  Asp  Tyr  Leu  Gln   Glu  Tyr  Ser  Thr  Lys   Tyr  Phe  Tyr  Lys
1255                      1260                 1265

cag  aat  ggg  cgg  atc  cgg   cct  att  gtg  gca  gag   aat  cct  gaa  tac         3885
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Gln  Asn Gly Arg Ile Arg   Pro Ile Val Ala Glu   Asn Pro Glu Tyr
1270           ·            1275              1280

ctc  tct gag ttc tcc ctg   aag cca ggc act gtg   ctg ccg cct cca         3930
Leu  Ser Glu Phe Ser Leu   Lys Pro Gly Thr Val   Leu Pro Pro Pro
1285     ·                  1290                  1295

cct  tac aga cac cgg aat   act gtg gtg taa gctcagttgt ggttttttag         3980
Pro  Tyr Arg His Arg Asn   Thr Val Val
1300               1305
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gtggagagac acacctgctc caatttcccc accccctct cttcttctgg tggtcttcct        4040

tctaccccaa ggccagtagt tttgacactt cccagtggaa gatacagaga tgcaatgata       4100

gttatgtgct tacctaactt gaacattaga gggaaagact gaaagagaaa gataggagga       4160

accacaatgt ttcttcattt ctctgcatgg gttggtcagg agaatgaaac agctagagaa       4220

ggaccagaaa atgtaaggca atgctgccta ctatcaaact agctgtcact ttttttcttt       4280

ttcttttttct ttctttgttt ctttcttcct cttctttttt ttttttttttt taaagcagat     4340

ggttgaaaca cccatgctat ctgttcctat ctgcaggaac tgatgtgtgc atatttagca       4400

tccctggaaa tcataataaa gtttccatta gaacaaaaga ataacatttt ctataacata       4460

tgatagtgtc tgaaattgag aatccagttt ctttccccag cagtttctgt cctagcaagt       4520

aagaatggcc aactcaactt tcataatttta aaaatctcca ttaaagttat aactagtaat      4580

tatgttttca acactttttg gtttttttca ttttgttttg ctctgaccga ttcctttata       4640

tttgctcccc tattttttggc tttaatttct aattgcaaag atgtttacat caaagcttct      4700

tcacagaatt taagcaagaa atattttaat atagtgaaat ggccactact ttaagtatac       4760

aatctttaaa ataagaaagg gaggctaata ttttttcatgc tatcaaatta tcttcaccct     4820

catcctttac attttttcaac atttttttttt ctccataaat gacactactt gataggccgt     4880

tggttgtctg aagagtagaa gggaaactaa gagacagttc tctgtggttc aggaaaacta       4940

ctgatacttt caggggtggc ccaatgaggg aatccattga actggaagaa acacactgga       5000

ttgggtatgt ctacctggca gatactcaga aatgtagttt gcacttaagc tgtaattta       5060

tttgttcttt ttctgaactc cattttggat tttgaatcaa gcaatatgga agcaaccagc       5120

aaattaacta atttaagtac attttttaaaa aaagagctaa gataaagact gtggaaatgc      5180

caaaccaagc aaattaggaa ccttgcaacg gtatccaggg actatgatga gaggccagca       5240

cattatcttc atatgtcacc tttgctacgc aaggaaattt gttcagttcg tatacttcgt       5300

aagaaggaat gcgagtaagg attggcttga attccatgga atttctagta tgagactatt       5360

tatatgaagt agaaggtaac tctttgcaca taaattggta taataaaaag aaaaacacaa       5420

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                                                                        5484
tctc
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<210> 19
<211> 1308
<212> PRT
<213> Homo sapiens

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<400> 19

Met Lys Pro Ala Thr Gly Leu Trp Val Trp Val Ser Leu Leu Val Ala
1   5   10   15

Ala Gly Thr Val Gln Pro Ser Asp Ser Gln Ser Val Cys Ala Gly Thr
            20   25   30

Glu Asn Lys Leu Ser Ser Leu Ser Asp Leu Glu Gln Gln Tyr Arg Ala
        35   40   45

Leu Arg Lys Tyr Tyr Glu Asn Cys Glu Val Val Met Gly Asn Leu Glu
    50   55   60

Ile Thr Ser Ile Glu His Asn Arg Asp Leu Ser Phe Leu Arg Ser Val
65   70   75   80

Arg Glu Val Thr Gly Tyr Val Leu Val Ala Leu Asn Gln Phe Arg Tyr
            85   90   95

Leu Pro Leu Glu Asn Leu Arg Ile Ile Arg Gly Thr Lys Leu Tyr Glu
            100   105   110

Asp Arg Tyr Ala Leu Ala Ile Phe Leu Asn Tyr Arg Lys Asp Gly Asn
        115   120   125

Phe Gly Leu Gln Glu Leu Gly Leu Lys Asn Leu Thr Glu Ile Leu Asn
    130   135   140

Gly Gly Val Tyr Val Asp Gln Asn Lys Phe Leu Cys Tyr Ala Asp Thr
145   150   155   160

Ile His Trp Gln Asp Ile Val Arg Asn Pro Trp Pro Ser Asn Leu Thr
            165   170   175

Leu Val Ser Thr Asn Gly Ser Ser Gly Cys Gly Arg Cys His Lys Ser
            180   185   190

Cys Thr Gly Arg Cys Trp Gly Pro Thr Glu Asn His Cys Gln Thr Leu
    195   200   205

Thr Arg Thr Val Cys Ala Glu Gln Cys Asp Gly Arg Cys Tyr Gly Pro
    210   215   220

Tyr Val Ser Asp Cys Cys His Arg Glu Cys Ala Gly Gly Cys Ser Gly
225   230   235   240

Pro Lys Asp Thr Asp Cys Phe Ala Cys Met Asn Phe Asn Asp Ser Gly
            245   250   255

Ala Cys Val Thr Gln Cys Pro Gln Thr Phe Val Tyr Asn Pro Thr Thr

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| | 260 | | 265 | | 270 | |

Phe Gln Leu Glu His Asn Phe Asn Ala Lys Tyr Thr Tyr Gly Ala Phe
     275   280   285

Cys Val Lys Lys Cys Pro His Asn Phe Val Val Asp Ser Ser Ser Cys
   290   295   300

Val Arg Ala Cys Pro Ser Ser Lys Met Glu Val Glu Glu Asn Gly Ile
305   310   315   320

Lys Met Cys Lys Pro Cys Thr Asp Ile Cys Pro Lys Ala Cys Asp Gly
         325   330   335

Ile Gly Thr Gly Ser Leu Met Ser Ala Gln Thr Val Asp Ser Ser Asn
      340   345   350

Ile Asp Lys Phe Ile Asn Cys Thr Lys Ile Asn Gly Asn Leu Ile Phe
     355   360   365

Leu Val Thr Gly Ile His Gly Asp Pro Tyr Asn Ala Ile Glu Ala Ile
     370   375   380

Asp Pro Glu Lys Leu Asn Val Phe Arg Thr Val Arg Glu Ile Thr Gly
385   390   395   400

Phe Leu Asn Ile Gln Ser Trp Pro Pro Asn Met Thr Asp Phe Ser Val
         405   410   415

Phe Ser Asn Leu Val Thr Ile Gly Gly Arg Val Leu Tyr Ser Gly Leu
         420   425   430

Ser Leu Leu Ile Leu Lys Gln Gln Gly Ile Thr Ser Leu Gln Phe Gln
      435   440   445

Ser Leu Lys Glu Ile Ser Ala Gly Asn Ile Tyr Ile Thr Asp Asn Ser
     450   455   460

Asn Leu Cys Tyr Tyr His Thr Ile Asn Trp Thr Thr Leu Phe Ser Thr
465   470   475   480

Ile Asn Gln Arg Ile Val Ile Arg Asp Asn Arg Lys Ala Glu Asn Cys
         485   490   495

Thr Ala Glu Gly Met Val Cys Asn His Leu Cys Ser Ser Asp Gly Cys
         500   505   510

Trp Gly Pro Gly Pro Asp Gln Cys Leu Ser Cys Arg Arg Phe Ser Arg
     515   520   525

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Gly Arg Ile Cys Ile Glu Ser Cys Asn Leu Tyr Asp Gly Glu Phe Arg
    530                 535             540

Glu Phe Glu Asn Gly Ser Ile Cys Val Glu Cys Asp Pro Gln Cys Glu
545             550                 555                 560

Lys Met Glu Asp Gly Leu Leu Thr Cys His Gly Pro Gly Pro Asp Asn
                565                 570                 575

Cys Thr Lys Cys Ser His Phe Lys Asp Gly Pro Asn Cys Val Glu Lys
            580                 585                 590

Cys Pro Asp Gly Leu Gln Gly Ala Asn Ser Phe Ile Phe Lys Tyr Ala
        595                 600                 605

Asp Pro Asp Arg Glu Cys His Pro Cys His Pro Asn Cys Thr Gln Gly
    610                 615                 620

Cys Asn Gly Pro Thr Ser His Asp Cys Ile Tyr Tyr Pro Trp Thr Gly
625                 630                 635                 640

His Ser Thr Leu Pro Gln His Ala Arg Thr Pro Leu Ile Ala Ala Gly
                645                 650                 655

Val Ile Gly Gly Leu Phe Ile Leu Val Ile Val Gly Leu Thr Phe Ala
            660                 665                 670

Val Tyr Val Arg Arg Lys Ser Ile Lys Lys Lys Arg Ala Leu Arg Arg
        675                 680                 685

Phe Leu Glu Thr Glu Leu Val Glu Pro Leu Thr Pro Ser Gly Thr Ala
    690                 695                 700

Pro Asn Gln Ala Gln Leu Arg Ile Leu Lys Glu Thr Glu Leu Lys Arg
705                 710                 715                 720

Val Lys Val Leu Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys Gly Ile
                725                 730                 735

Trp Val Pro Glu Gly Glu Thr Val Lys Ile Pro Val Ala Ile Lys Ile
            740                 745                 750

Leu Asn Glu Thr Thr Gly Pro Lys Ala Asn Val Glu Phe Met Asp Glu
            755                 760                 765

Ala Leu Ile Met Ala Ser Met Asp His Pro His Leu Val Arg Leu Leu
    770                 775                 780

Gly Val Cys Leu Ser Pro Thr Ile Gln Leu Val Thr Gln Leu Met Pro
785                 790                 795                 800
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His Gly Cys Leu Leu Glu Tyr Val His Glu His Lys Asp Asn Ile Gly
            805                     810                 815


Ser Gln Leu Leu Leu Asn Trp Cys Val Gln Ile Ala Lys Gly Met Met
            820                     825                 830


Tyr Leu Glu Glu Arg Arg Leu Val His Arg Asp Leu Ala Ala Arg Asn
            835                     840                 845


Val Leu Val Lys Ser Pro Asn His Val Lys Ile Thr Asp Phe Gly Leu
            850                     855                 860


Ala Arg Leu Leu Glu Gly Asp Glu Lys Glu Tyr Asn Ala Asp Gly Gly
865                     870                 875                 880


Lys Met Pro Ile Lys Trp Met Ala Leu Glu Cys Ile His Tyr Arg Lys
                885                     890                 895


Phe Thr His Gln Ser Asp Val Trp Ser Tyr Gly Val Thr Ile Trp Glu
            900                     905                 910


Leu Met Thr Phe Gly Gly Lys Pro Tyr Asp Gly Ile Pro Thr Arg Glu
            915                     920                 925


Ile Pro Asp Leu Leu Glu Lys Gly Glu Arg Leu Pro Gln Pro Pro Ile
    930                     935                 940


Cys Thr Ile Asp Val Tyr Met Val Met Val Lys Cys Trp Met Ile Asp
945                     950                 955                 960


Ala Asp Ser Arg Pro Lys Phe Lys Glu Leu Ala Ala Glu Phe Ser Arg
                965                     970                 975


Met Ala Arg Asp Pro Gln Arg Tyr Leu Val Ile Gln Gly Asp Asp Arg
            980                     985                 990


Met Lys Leu Pro Ser Pro Asn Asp Ser Lys Phe Phe Gln Asn Leu Leu
            995                     1000                1005


Asp Glu Glu Asp Leu Glu Asp Met Met Asp Ala Glu Glu Tyr Leu
    1010                1015                1020


Val Pro Gln Ala Phe Asn Ile Pro Pro Pro Ile Tyr Thr Ser Arg
    1025                    1030                1035


Ala Arg Ile Asp Ser Asn Arg Ser Glu Ile Gly His Ser Pro Pro
    1040                1045                1050


Pro Ala Tyr Thr Pro Met Ser Gly Asn Gln Phe Val Tyr Arg Asp
    1055                1060                1065
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Asn Phe Asn Asp Ser Gly Ala Cys Val Thr Gln Cys Pro Gln Thr Phe
            245                 250             255

gtc tac aat cca acc acc ttt caa ctg gaa cac aac ttc aat gca aag    816
Val Tyr Asn Pro Thr Thr Phe Gln Leu Glu His Asn Phe Asn Ala Lys
            260                 265             270

tac acg tat gga gca ttc tgt gtt aag aaa tgt cca cat aac ttc gtg    864
Tyr Thr Tyr Gly Ala Phe Cys Val Lys Lys Cys Pro His Asn Phe Val
            275                 280             285

gta gat tcc agt tct tgt gta cga gcc tgc cct agt tct aag atg gaa    912
Val Asp Ser Ser Ser Cys Val Arg Ala Cys Pro Ser Ser Lys Met Glu
290             295             300

gta gaa gaa aat ggg att aaa atg tgt aag cct tgc acc gat att tgc    960
Val Glu Glu Asn Gly Ile Lys Met Cys Lys Pro Cys Thr Asp Ile Cys
305             310             315             320

ccc aaa gca tgt gat gga atc ggc acg gga tca ctg atg tct gct cag   1008
Pro Lys Ala Cys Asp Gly Ile Gly Thr Gly Ser Leu Met Ser Ala Gln
            325                 330             335

act gtg gat tca agt aac att gac aaa ttc ata aac tgc aca aag atc   1056
Thr Val Asp Ser Ser Asn Ile Asp Lys Phe Ile Asn Cys Thr Lys Ile
            340                 345             350

aat ggc aat ctc atc ttt ctt gtc act ggc att cat gga gac cct tac   1104
Asn Gly Asn Leu Ile Phe Leu Val Thr Gly Ile His Gly Asp Pro Tyr
            355                 360             365

aat gct att gac gcc ata gat cca gag aaa ctg aat gtc ttt cgg act   1152
Asn Ala Ile Asp Ala Ile Asp Pro Glu Lys Leu Asn Val Phe Arg Thr
370             375             380

gtc aga gaa ata aca ggt ttc ctg aac ata cag tct tgg ccc cca aat   1200
Val Arg Glu Ile Thr Gly Phe Leu Asn Ile Gln Ser Trp Pro Pro Asn
385             390             395             400

atg aca gat ttc agt gtt ttc tcc aac ctc gtc aca att gga gga aga   1248
Met Thr Asp Phe Ser Val Phe Ser Asn Leu Val Thr Ile Gly Gly Arg
            405                 410             415

gtc ctc tac agt ggt ctc tca ttg ctg atc ctc aaa caa caa ggt atc   1296
Val Leu Tyr Ser Gly Leu Ser Leu Leu Ile Leu Lys Gln Gln Gly Ile
            420                 425             430

act tcc cta cag ttc cag tct ctg aag gaa atc agt gcg ggc aat atc   1344
Thr Ser Leu Gln Phe Gln Ser Leu Lys Glu Ile Ser Ala Gly Asn Ile
            435                 440             445

tac atc act gac aac agc aac ctg tgt tat tac cat acc att aac tgg   1392
Tyr Ile Thr Asp Asn Ser Asn Leu Cys Tyr Tyr His Thr Ile Asn Trp
450             455             460

aca aca ctc ttc agc acc att aac cag aga ata gtg atc cga gat aac   1440
Thr Thr Leu Phe Ser Thr Ile Asn Gln Arg Ile Val Ile Arg Asp Asn
465             470             475             480

aga aga gct gag aat tgt act gct gaa ggc atg gta tgc aac cac ctg   1488
Arg Arg Ala Glu Asn Cys Thr Ala Glu Gly Met Val Cys Asn His Leu
            485                 490             495

tgt tca aat gat ggt tgt tgg gga cct ggg ccg gac cag tgc ctg tca   1536
Cys Ser Asn Asp Gly Cys Trp Gly Pro Gly Pro Asp Gln Cys Leu Ser
            500                 505             510

tgt cgg cgc ttc agc agg gga aag atc tgc ata gag tct tgc aac ctt   1584
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Gly Gly  Phe Ala Ala Glu Gln  Gly Val Ser Val Pro  Tyr Arg Ala
    1070                 1075             1080

Pro Thr  Ser Thr Ile Pro Glu  Ala Pro Val Ala Gln  Gly Ala Thr
    1085                 1090             1095

Ala Glu  Ile Phe Asp Asp Ser  Cys Cys Asn Gly Thr  Leu Arg Lys
    1100                 1105             1110

Pro Val  Ala Pro His Val Gln  Glu Asp Ser Ser Thr  Gln Arg Tyr
    1115                 1120             1125

Ser Ala  Asp Pro Thr Val Phe  Ala Pro Glu Arg Ser  Pro Arg Gly
    1130                 1135             1140

Glu Leu  Asp Glu Glu Gly Tyr  Met Thr Pro Met Arg  Asp Lys Pro
    1145                 1150             1155

Lys Gln  Glu Tyr Leu Asn Pro  Val Glu Glu Asn Pro  Phe Val Ser
    1160                 1165             1170

Arg Arg  Lys Asn Gly Asp Leu  Gln Ala Leu Asp Asn  Pro Glu Tyr
    1175                 1180             1185

His Asn  Ala Ser Asn Gly Pro  Pro Lys Ala Glu Asp  Glu Tyr Val
    1190                 1195             1200

Asn Glu  Pro Leu Tyr Leu Asn  Thr Phe Ala Asn Thr  Leu Gly Lys
    1205                 1210             1215

Ala Glu  Tyr Leu Lys Asn Asn  Ile Leu Ser Met Pro  Glu Lys Ala
    1220                 1225             1230

Lys Lys  Ala Phe Asp Asn Pro  Asp Tyr Trp Asn His  Ser Leu Pro
    1235                 1240             1245

Pro Arg  Ser Thr Leu Gln His  Pro Asp Tyr Leu Gln  Glu Tyr Ser
    1250                 1255             1260

Thr Lys  Tyr Phe Tyr Lys Gln  Asn Gly Arg Ile Arg  Pro Ile Val
    1265                 1270             1275

Ala Glu  Asn Pro Glu Tyr Leu  Ser Glu Phe Ser Leu  Lys Pro Gly
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aca gtg tgc gca gga aca gag aac aaa ctg agc tct ctc tct gac ctg      96
Thr Val Cys Ala Gly Thr Glu Asn Lys Leu Ser Ser Leu Ser Asp Leu
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gaa cag cag tac cga gcc ttg cgc aaa tac tat gaa aac tgc gag gta     144
Glu Gln Gln Tyr Arg Ala Leu Arg Lys Tyr Tyr Glu Asn Cys Glu Val
            35                  40                  45

gtc atg ggc aac ctg gag atc acc agc atc gag cac aac cgg gac ctc     192
Val Met Gly Asn Leu Glu Ile Thr Ser Ile Glu His Asn Arg Asp Leu
        50                  55                  60

tcc ttc ctg cgg tct atc cga gaa gtc aca ggc tac gtc ctg gtg gcc     240
Ser Phe Leu Arg Ser Ile Arg Glu Val Thr Gly Tyr Val Leu Val Ala
65                  70                  75                  80

ctc aac cag ttt cgt tac ttg cct ctg gag aat tta cgc att att cgt     288
Leu Asn Gln Phe Arg Tyr Leu Pro Leu Glu Asn Leu Arg Ile Ile Arg
                85                  90                  95

ggg aca aaa cta tat gaa gat cgc tat gcc tta gcg ata ttc tta aac     336
Gly Thr Lys Leu Tyr Glu Asp Arg Tyr Ala Leu Ala Ile Phe Leu Asn
                100                 105                 110

tac agg aaa gat ggc aac ttt gga ctc caa gaa ctt gga tta aag aac     384
Tyr Arg Lys Asp Gly Asn Phe Gly Leu Gln Glu Leu Gly Leu Lys Asn
            115                 120                 125

ctg acc gaa ata cta aat ggt gga gtc tat gta gac cag aac aaa ttc     432
Leu Thr Glu Ile Leu Asn Gly Gly Val Tyr Val Asp Gln Asn Lys Phe
        130                 135                 140

cta tgt tat gct gac act ata cac tgg caa gat att gtt cgg aat cca     480
Leu Cys Tyr Ala Asp Thr Ile His Trp Gln Asp Ile Val Arg Asn Pro
145                 150                 155                 160

tgg cct tcc aac atg act ctg gtg tca aca aat gga agt tct gga tgt     528
Trp Pro Ser Asn Met Thr Leu Val Ser Thr Asn Gly Ser Ser Gly Cys
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gga aga tgc cat aag tct tgc act ggc cga tgc tgg gga ccc aca gaa     576
Gly Arg Cys His Lys Ser Cys Thr Gly Arg Cys Trp Gly Pro Thr Glu
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aat cac tgc cag acc ttg acc aga act gtg tgt gct gaa caa tgt gat     624
Asn His Cys Gln Thr Leu Thr Arg Thr Val Cys Ala Glu Gln Cys Asp
            195                 200                 205

ggc agg tgc tat gga ccc tac gtt agt gac tgc tgc cat cga gaa tgt     672
Gly Arg Cys Tyr Gly Pro Tyr Val Ser Asp Cys Cys His Arg Glu Cys
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gct gga ggc tgc tca gga cca aag gac act gac tgc ttt gcc tgc atg     720
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Tyr Asp Gly Glu Phe Arg Glu Phe Glu Asn Gly Ser Ile Cys Val Glu
        530             535             540
tgt gac tcc cag tgt gag aaa atg gaa gat gga ctc ctc aca tgc cat    1680
Cys Asp Ser Gln Cys Glu Lys Met Glu Asp Gly Leu Leu Thr Cys His
545             550             555             560
gga ccg gga cct gac aac tgc aca aag tgc tct cat ttt aag gat ggt    1728
Gly Pro Gly Pro Asp Asn Cys Thr Lys Cys Ser His Phe Lys Asp Gly
                565             570             575
cca aac tgt gtg gag aaa tgt cca gat ggc cta cag gga gca aac agt    1776
Pro Asn Cys Val Glu Lys Cys Pro Asp Gly Leu Gln Gly Ala Asn Ser
            580             585             590
ttc att ttt aag tat gca gat cag gat cgg gag tgc cac cct tgc cat    1824
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            595             600             605
cca aac tgc acc cag ggg tgt aac ggt ccc act agt cat gac tgc att    1872
Pro Asn Cys Thr Gln Gly Cys Asn Gly Pro Thr Ser His Asp Cys Ile
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tac tac cca tgg acg ggc cat tcc act tta cca caa cac gct aga act    1920
Tyr Tyr Pro Trp Thr Gly His Ser Thr Leu Pro Gln His Ala Arg Thr
625             630             635             640
cca ctg att gca gcc gga gtc att gga ggc ctc ttc atc ctg gtg atc    1968
Pro Leu Ile Ala Ala Gly Val Ile Gly Gly Leu Phe Ile Leu Val Ile
                645             650             655
atg gct ttg aca ttt gct gtc tat gtc aga aga aag agc atc aaa aag    2016
Met Ala Leu Thr Phe Ala Val Tyr Val Arg Arg Lys Ser Ile Lys Lys
                660             665             670
aaa cgt gct ttg agg aga ttc ctg gag aca gag ctg gta gag ccc tta    2064
Lys Arg Ala Leu Arg Arg Phe Leu Glu Thr Glu Leu Val Glu Pro Leu
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act ccc agt ggc acg gca ccc aat caa gct caa ctt cgc att ttg aag    2112
Thr Pro Ser Gly Thr Ala Pro Asn Gln Ala Gln Leu Arg Ile Leu Lys
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gaa acc gaa cta aag agg gta aag gtc ctt ggc tcg gga gct ttt gga    2160
Glu Thr Glu Leu Lys Arg Val Lys Val Leu Gly Ser Gly Ala Phe Gly
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Thr Val Tyr Lys Gly Ile Trp Val Pro Glu Gly Glu Thr Val Lys Ile
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cct gtg gct ata aag atc ctc aat gaa aca act ggc ccc aaa gcc aac    2256
Pro Val Ala Ile Lys Ile Leu Asn Glu Thr Thr Gly Pro Lys Ala Asn
            740             745             750
gtg gag ttc atg gat gag gct ctg atc atg gca agt atg gat cac cca    2304
Val Glu Phe Met Asp Glu Ala Leu Ile Met Ala Ser Met Asp His Pro
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cac cta gtt cgc cta ttg gga gtg tgt ctg agt ccc act atc cag ttg    2352
His Leu Val Arg Leu Leu Gly Val Cys Leu Ser Pro Thr Ile Gln Leu
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gtt acg cag ctg atg ccg cat ggc tgc cta ctg gac tat gtt cat gaa    2400
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Val Thr Gln Leu Met Pro His Gly Cys Leu Leu Asp Tyr Val His Glu
785               790           795               800

cac aag gat aac att gga tca cag ctg ctg ttg aac tgg tgt gtc cag      2448
His Lys Asp Asn Ile Gly Ser Gln Leu Leu Leu Asn Trp Cys Val Gln
                805               810               815

att gct aag gga atg atg tac cta gaa gaa aga cgg ctt gtt cat cgg      2496
Ile Ala Lys Gly Met Met Tyr Leu Glu Glu Arg Arg Leu Val His Arg
                820               825               830

gat ctg gca gcc cgc aat gtc tta gtg aaa tct cca aat cat gtt aaa      2544
Asp Leu Ala Ala Arg Asn Val Leu Val Lys Ser Pro Asn His Val Lys
            835               840               845

atc aca gat ttt gga ctg gcc cgg ctc ttg gaa gga gat gaa aaa gaa      2592
Ile Thr Asp Phe Gly Leu Ala Arg Leu Leu Glu Gly Asp Glu Lys Glu
        850               855               860

tac aat gct gat ggt ggc aag atg cca att aaa tgg atg gct ctg gaa      2640
Tyr Asn Ala Asp Gly Gly Lys Met Pro Ile Lys Trp Met Ala Leu Glu
865               870               875               880

tgt ata cat tat agg aaa ttc aca cat caa agt gat gtt tgg agc tat      2688
Cys Ile His Tyr Arg Lys Phe Thr His Gln Ser Asp Val Trp Ser Tyr
                885               890               895

ggc gtc act ata tgg gaa ctg atg acc ttt gga gga aag ccc tat gat      2736
Gly Val Thr Ile Trp Glu Leu Met Thr Phe Gly Gly Lys Pro Tyr Asp
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gga att cca acc cga gaa atc ccc gat tta ctg gag aaa gga gag cgt      2784
Gly Ile Pro Thr Arg Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu Arg
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ctg cct cag cct ccc atc tgc act att gat gtt tac atg gtc atg gtc      2832
Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val Tyr Met Val Met Val
        930               935               940

aaa tgt tgg atg atc gat gct gac agc aga cct aaa ttc aaa gaa ctg      2880
Lys Cys Trp Met Ile Asp Ala Asp Ser Arg Pro Lys Phe Lys Glu Leu
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gct gct gag ttt tca aga atg gct aga gac cct caa aga tac cta gtt      2928
Ala Ala Glu Phe Ser Arg Met Ala Arg Asp Pro Gln Arg Tyr Leu Val
                965               970               975

att cag ggt gat gat cgt atg aag ctt ccc agt cca aat gac agc aaa      2976
Ile Gln Gly Asp Asp Arg Met Lys Leu Pro Ser Pro Asn Asp Ser Lys
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ttc ttc cag aat ctc ttg gat gaa  gag gat ttg gaa gac  atg atg gat      3024
Phe Phe Gln Asn Leu Leu Asp Glu  Glu Asp Leu Glu Asp  Met Met Asp
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gct gag  gaa tat ttg gtc ccc  cag gct ttc aac ata  cct cct ccc      3069
Ala Glu  Glu Tyr Leu Val Pro  Gln Ala Phe Asn Ile  Pro Pro Pro
    1010              1015              1020

atc tac  aca tcc aga aca aga  att gac tcc aat agg  agt gaa att      3114
Ile Tyr  Thr Ser Arg Thr Arg  Ile Asp Ser Asn Arg  Ser Glu Ile
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gga cac  agc cct cct cct gcc  tac acc ccc atg tcg  gga aat cag      3159
Gly His  Ser Pro Pro Pro Ala  Tyr Thr Pro Met Ser  Gly Asn Gln
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ttt gtg  tac caa gat ggg ggc  ttt gct aca caa caa  gga atg ccc      3204
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Met Pro   Tyr Arg Ala Thr Thr   Ser Thr Ile Pro Glu   Ala Pro Val
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gct cag   ggt gca acg gct gag   atg ttt gat gac tcc   tgc tgt aat          3294
Ala Gln   Gly Ala Thr Ala Glu   Met Phe Asp Asp Ser   Cys Cys Asn
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ggt acc   cta cga aag cca gtg   gca ccc cat gtc caa   gag gac agt          3339
Gly Thr   Leu Arg Lys Pro Val   Ala Pro His Val Gln   Glu Asp Ser
    1100                1105                 1110

agc act   cag agg tat agt gct   gat ccc aca gtg ttc   gcc cca gaa          3384
Ser Thr   Gln Arg Tyr Ser Ala   Asp Pro Thr Val Phe   Ala Pro Glu
    1115                1120                 1125

cgg aat   cct cga gga gaa ctg   gat gaa gaa ggc tac   atg act cca          3429
Arg Asn   Pro Arg Gly Glu Leu   Asp Glu Glu Gly Tyr   Met Thr Pro
    1130                1135                 1140

atg cat   gac aag ccc aaa caa   gaa tat ctg aat cct   gtg gaa gag          3474
Met His   Asp Lys Pro Lys Gln   Glu Tyr Leu Asn Pro   Val Glu Glu
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aac cct   ttt gtg tcc cga agg   aag aat gga gat ctt   caa gct tta          3519
Asn Pro   Phe Val Ser Arg Arg   Lys Asn Gly Asp Leu   Gln Ala Leu
    1160                1165                 1170

gat aat   ccg gag tat cac agt   gct tcc agc ggt cca   ccc aag gcg          3564
Asp Asn   Pro Glu Tyr His Ser   Ala Ser Ser Gly Pro   Pro Lys Ala
    1175                1180                 1185

gag gat   gaa tac gtg aat gag   cct cta tac ctc aac   acc ttc gcc          3609
Glu Asp   Glu Tyr Val Asn Glu   Pro Leu Tyr Leu Asn   Thr Phe Ala
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aat gcc   ttg ggg agt gca gag   tac atg aaa aac agt   gta ctg tct          3654
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Val Pro   Glu Lys Ala Lys Lys   Ala Phe Asp Asn Pro   Asp Tyr Trp
    1220                1225                 1230

aac cac   agc ctg cca ccc cgg   agc acc ctt cag cac   cca gac tac          3744
Asn His   Ser Leu Pro Pro Arg   Ser Thr Leu Gln His   Pro Asp Tyr
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ctg cag   gaa tac agc aca aaa   tat ttt tat aaa cag   aat gga cgg          3789
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Ser Leu   Lys Pro Gly Thr Met   Leu Pro Pro Pro Pro   Tyr Arg His
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Tyr Thr Tyr Gly Ala Phe Cys Val Lys Lys Cys Pro His Asn Phe Val
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Val Asp Ser Ser Ser Cys Val Arg Ala Cys Pro Ser Ser Lys Met Glu
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Val Glu Glu Asn Gly Ile Lys Met Cys Lys Pro Cys Thr Asp Ile Cys
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Pro Lys Ala Cys Asp Gly Ile Gly Thr Gly Ser Leu Met Ser Ala Gln
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Thr Val Asp Ser Ser Asn Ile Asp Lys Phe Ile Asn Cys Thr Lys Ile
            340                 345             350


Asn Gly Asn Leu Ile Phe Leu Val Thr Gly Ile His Gly Asp Pro Tyr
            355                 360             365


Asn Ala Ile Asp Ala Ile Asp Pro Glu Lys Leu Asn Val Phe Arg Thr
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Val Arg Glu Ile Thr Gly Phe Leu Asn Ile Gln Ser Trp Pro Pro Asn
385                 390             395                 400


Met Thr Asp Phe Ser Val Phe Ser Asn Leu Val Thr Ile Gly Gly Arg
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Val Leu Tyr Ser Gly Leu Ser Leu Leu Ile Leu Lys Gln Gln Gly Ile
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Thr Ser Leu Gln Phe Gln Ser Leu Lys Glu Ile Ser Ala Gly Asn Ile
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Tyr Ile Thr Asp Asn Ser Asn Leu Cys Tyr Tyr His Thr Ile Asn Trp
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465             470             475                 480


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Pro Asn Cys Val Glu Lys Cys Pro Asp Gly Leu Gln Gly Ala Asn Ser
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Phe Ile Phe Lys Tyr Ala Asp Gln Asp Arg Glu Cys His Pro Cys His
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Tyr Tyr Pro Trp Thr Gly His Ser Thr Leu Pro Gln His Ala Arg Thr
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Pro Leu Ile Ala Ala Gly Val Ile Gly Gly Leu Phe Ile Leu Val Ile
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Lys Arg Ala Leu Arg Arg Phe Leu Glu Thr Glu Leu Val Glu Pro Leu
        675   680   685

Thr Pro Ser Gly Thr Ala Pro Asn Gln Ala Gln Leu Arg Ile Leu Lys
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Glu Thr Glu Leu Lys Arg Val Lys Val Leu Gly Ser Gly Ala Phe Gly
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Thr Val Tyr Lys Gly Ile Trp Val Pro Glu Gly Glu Thr Val Lys Ile
                725   730   735

Pro Val Ala Ile Lys Ile Leu Asn Glu Thr Thr Gly Pro Lys Ala Asn
        740   745   750

Val Glu Phe Met Asp Glu Ala Leu Ile Met Ala Ser Met Asp His Pro
        755   760   765

His Leu Val Arg Leu Leu Gly Val Cys Leu Ser Pro Thr Ile Gln Leu
    770   775   780

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Val Thr Gln Leu Met Pro His Gly Cys Leu Leu Asp Tyr Val His Glu
785   790   795   800

His Lys Asp Asn Ile Gly Ser Gln Leu Leu Leu Asn Trp Cys Val Gln
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Ile Ala Lys Gly Met Met Tyr Leu Glu Glu Arg Arg Leu Val His Arg
            820   825   830

Asp Leu Ala Ala Arg Asn Val Leu Val Lys Ser Pro Asn His Val Lys
        835   840   845

Ile Thr Asp Phe Gly Leu Ala Arg Leu Leu Glu Gly Asp Glu Lys Glu
    850   855   860

Tyr Asn Ala Asp Gly Gly Lys Met Pro Ile Lys Trp Met Ala Leu Glu
865   870   875   880

Cys Ile His Tyr Arg Lys Phe Thr His Gln Ser Asp Val Trp Ser Tyr
            885   890   895

Gly Val Thr Ile Trp Glu Leu Met Thr Phe Gly Gly Lys Pro Tyr Asp
            900   905   910

Gly Ile Pro Thr Arg Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu Arg
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Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val Tyr Met Val Met Val
    930   935   940

Lys Cys Trp Met Ile Asp Ala Asp Ser Arg Pro Lys Phe Lys Glu Leu
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Ile Gln Gly Asp Asp Arg Met Lys Leu Pro Ser Pro Asn Asp Ser Lys
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Gly His Ser Pro Pro Pro Ala Tyr Thr Pro Met Ser Gly Asn Gln
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Met Pro   Tyr Arg Ala Thr Thr   Ser Thr Ile Pro Glu   Ala Pro Val
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Ala Gln   Gly Ala Thr Ala Glu   Met Phe Asp Asp Ser   Cys Cys Asn
    1085                  1090                  1095


Gly Thr   Leu Arg Lys Pro Val   Ala Pro His Val Gln   Glu Asp Ser
    1100                  1105                  1110


Ser Thr   Gln Arg Tyr Ser Ala   Asp Pro Thr Val Phe   Ala Pro Glu
    1115                  1120                  1125


Arg Asn   Pro Arg Gly Glu Leu   Asp Glu Glu Gly Tyr   Met Thr Pro
    1130                  1135                  1140


Met His   Asp Lys Pro Lys Gln   Glu Tyr Leu Asn Pro   Val Glu Glu
    1145                  1150                  1155


Asn Pro   Phe Val Ser Arg Arg   Lys Asn Gly Asp Leu   Gln Ala Leu
    1160                  1165                  1170


Asp Asn   Pro Glu Tyr His Ser   Ala Ser Ser Gly Pro   Pro Lys Ala
    1175                  1180                  1185


Glu Asp   Glu Tyr Val Asn Glu   Pro Leu Tyr Leu Asn   Thr Phe Ala
    1190                  1195                  1200


Asn Ala   Leu Gly Ser Ala Glu   Tyr Met Lys Asn Ser   Val Leu Ser
    1205                  1210                  1215


Val Pro   Glu Lys Ala Lys Lys   Ala Phe Asp Asn Pro   Asp Tyr Trp
    1220                  1225                  1230


Asn His   Ser Leu Pro Pro Arg   Ser Thr Leu Gln His   Pro Asp Tyr
    1235                  1240                  1245


Leu Gln   Glu Tyr Ser Thr Lys   Tyr Phe Tyr Lys Gln   Asn Gly Arg
    1250                  1255                  1260


Ile Arg   Pro Ile Val Ala Glu   Asn Pro Glu Tyr Leu   Ser Glu Phe
    1265                  1270                  1275


Ser Leu   Lys Pro Gly Thr Met   Leu Pro Pro Pro   Tyr Arg His
    1280                  1285                  1290


Arg Asn   Thr Val Val
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INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12Q 1/00; G01N 33/53; A61K 38/00; C07K 1/00, 2/00, 4/00, 5/00, 7/00, 14/00, 16/00, 17/00
US CL : 435/4, 7.1; 530/300, 350, 385, 386, 387.1, 387.3; 436/64, 86

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 435/4, 7.1; 530/300, 350, 385, 386, 387.1, 387.3; 436/64, 86

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
West and Medline

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ROBERTS, R.B. et al. Modeling the cancer pateint with genetically engineered mice: prediction of toxicity from molecule-targeted therapies. February 2004, Vol 5, pages 115-120.	1-28

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier application or patent published on or after the international filing date		
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed	"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 August 2005 (30.08.2005)	**27 JAN 2006**
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Alana M. Harris, Ph.D. Telephone No. 571-272-1600

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